American Bottom Conservancy
American Lung Association of Metropolitan Chicago
Asthma Coalition of Greater St. Louis–Metro East
Health & Environmental Justice–St. Louis
Illinois Environmental Council
Illinois Public Interest Research Group
Illinois Stewardship Alliance
Lake County Conservation Alliance
Ohio Environmental Council
Sierra Club
Valley Watch

March 29, 2004

Ms. Leanne Tippett
Department of Natural Resources
P.O. Box 176
Jefferson City, MO 65102-0176

Via fax 573-751-2706

Re: Holcim (US) Inc. Air Permit

Dear Ms. Tippett:

Collectively, our organizations represent many thousands of citizens in the State of Illinois, Missouri, Indiana and Kentucky. We are writing to urge you to deny the air permit for Holcim Inc. to construct what would be the largest cement kiln in North America in Ste. Genevieve County, Missouri, across the Mississippi River from Illinois. According to your own permit, the air quality in Illinois will be "……significantly impacted by the construction of this facility." (p. 35). In fact, most of the emissions from the plant will be carried to Illinois.

As you know, the Metro East does not meet federal air quality standards for ozone or fine particulates. Nor does Metropolitan Chicago. More than eight million citizens in the State of Illinois live in areas that do not meet the national ambient air quality standards for ozone and fine particulate matter; more than a million Illinois citizens have asthma and such air pollutants lead to increased numbers of asthma attacks, emergency room visits, hospital stays, and even significant premature deaths. Your permit does not even address the new fine particulate standard.

This plant would emit some 26,000 tons of pollution per year, including 14,506 tons of Carbon

Monoxide, 7,254 tons of Nitrogen Dioxide (N0x), 260 pounds of lead and 160 pounds of mercury per year. Those amounts are unacceptable. All our lakes, rivers and streams in Illinois have advisories against eating fish because of mercury, and in the Metro East many minority and low-income people use the fish caught in contaminated waters as their main source of protein.

Holcim proposed this plant just a thousand feet outside the then ozone nonattainment area. When U.S. EPA proposed to include Ste. Genevieve County in the eight-hour ozone nonattainment designation, you asked to have it removed. EPA countered and explained that Ste. Genevieve County was included "because of the existence of unaddressed large, potential and existing emissions sources lacking Federally enforceable state-of-the-art-science emission controls." It is obvious EPA was referring to the Holcim plant. Ste. Genevieve is contiguous to the nonattainment area and will contribute emissions.

Furthermore, although technology (selective catalytic reduction–SCR) exists that could reduce the pollution from this plant by perhaps 85 percent, you are not requiring it. You are using just multi-stage combustion and SNCR in the summers on a trial basis.

Modeling done by the Illinois EPA shows emissions from Missouri reaching all the way to Metropolitan Chicago. Indeed, Missouri emissions have been traced to the Arctic Circle. Holcim's own modeling for this plant shows major impacts to the Metro East and beyond.

At a public hearing on the proposed Peabody coal-fired power plant in Illinois last week, a representative of the State of Maine Department of Environmental Protection traveled more than a thousand miles to protest the impacts to Maine from burning coal in Illinois. Illinois and other Midwestern states are required to reduce their emissions because of impacts on Northeastern states. North Carolina has also filed with the EPA a petition to reduce such emissions. Missouri must do its share–or become another target of downwind state petitions. Sending the emissions from this source to downwind states without state-of-the-art controls is unacceptable.

Your decision has tremendous consequences for air quality and the health of citizens, not only in the St. Louis metropolitan area, but indeed for the entire State of Illinois, for Indiana, Ohio and countless other downwind states. We urge you to protect your citizens and ours. We urge you to deny this permit.

We also request an extension of the public comment period for an additional 30 days. In Illinois, there is a 30-day comment period <u>after</u> the public hearing. Many people are unaware that Missouri's public comment period ends the day of the public hearing and will be unable to comment on this source that would have such great impacts on their lives.

Thank you for your consideration of our comments.

Brian Urbaszewski Tina Barnard

American Lung Assn. of Metropolitan Chicago

Asthma Coalition of Greater St. Louis–Metro East

Kathleen Logan-Smith
Health & Environmental Justice–St. Louis

Jonathan Goldman
Illinois Environmental Council

Mark Beorkrem
Illinois Stewardship Alliance

Diane Brown
Illinois Public Interest Research Group

Verena Owen
Lake County Conservation Alliance

Vicki Deisner
Ohio Environmental Council

Jack Norman
Kaskaskia Group
Illinois Chapter–Sierra Club

Jim Bensman
Piasa Palisades Group
Sierra Club

John Blair
Valley Watch, Indiana

Kathy Andria
American Bottom Conservancy

A. A. Linero, P.E.
Tallahassee, Florida
March 29, 2004 By Electronic Mail

Ms. Leanne Tippett
Missouri Department of Natural Resources
Post Office Box 176
Jefferson City, MO 65102-0176.

Re: Holcim Cement Lee Island Project
MNDR File No. 2000-05-077

Dear Ms. Tippett:

I received e-mail notice of the referenced project and subsequently reviewed the draft permit and supporting technical documents available on the MDNR website. I am commenting solely on my own behalf as a person knowledgeable in cement plant permitting and determination of best available control technology (BACT).

I reviewed only the BACT issues of the draft permit and project review document related to the pollutants nitrogen oxides (NO_X) and sulfur dioxide (SO_2). I made a few observations regarding carbon monoxide and volatile organic compounds (VOC). I did not review any matters related to ambient air quality impacts or siting matters.

The highlights of comments and recommendations are enumerated below and are discussed in greater detail in the three appendices to this letter. Briefly, my comments and recommendations are as follows:

1. Lime injection for further SO_2 reduction can be practiced at several locations in the process without defeating or duplicating the inherent dry scrubbing credited to the raw mill and without installation of large industrial wet or dry scrubbers.
2. The SO_2 emission limit can be cut in half by the measures mentioned in 1 above.
3. The SO_2 averaging time should be reduced to a monthly (or shorter) basis rather than a 12-month basis.
4. Multistaged Combustion (MSC) in the calciner needs to be described so that its components (at least two burners in the calciner/kiln inlet zone in addition to the main kiln burner) are actually installed and operated in a reducing atmosphere as described by the manufacturer's product literature.
5. The NO_X averaging time should be reduced to a monthly (or shorter) basis rather than a 12-month basis.
6. The goal at the end of the initial two year period should be lowered to 2.45 lb/ton of clinker reflecting the actual emissions from similar MSC kilns in Florida that started up 5 to 8 years prior to the presently anticipated startup date on the Holcim Lee project.
7. By now ammonia or urea injection known as Selective Non-Catalytic Reduction (SNCR) is actually BACT and not an Innovative Control Technology (ICT). This is based on cost-effectiveness and several dozen world-wide applications.

8. It is fair to provide some time (perhaps two years) to optimize MSC and SNCR but not five years (seven years from startup).
9. Ammonia injection in the presence of a catalyst known as Selective Catalytic Reduction (SCR) is actually technically feasible and potentially an ICT. SCR can only be dismissed on economic arguments or if the combination of SNCR and operation of the calciner in a reducing atmosphere (e.g. MSC) together can achieve similar results.
10. The NO_X BACT limit soon after implementation of SNCR (and MSC) should be 2.0 lb/ton of clinker given the Florida experience with MSC alone. MDNR should retain the right to further lower this value as well as the final SO_2 limit (and reconsider averaging times) following a period of optimization. This is in view of the achievement of 1 lb/ton clinker by SNCR in conjunction with a Low NO_X calciner at the SCANCEM Slite kiln in Gottland Sweden.
11. European-based equipment manufacturers, including the Holcim project's supplier, do in fact supply or include equipment to meet values of 500 mg/m^3 (2.3 lb/ton of clinker) or lower at new (and some existing) cement kilns in Europe on a **24-hour basis**.
12. Emission limits for VOC and CO should be reviewed given the availability of hot tertiary air to complete combustion.
13. Imported raw material specifications on mill scale and ash should be eventually prepared to insure oily or sooty substances do not unduly contribute to VOC or CO. Consideration should be given to injecting some of these materials directly into the calciner burn the combustible fractions contained therein.

The new facility will be among the largest ever built. This BACT will affect similar determinations throughout the country for some time to come at both attainment and non-attainment areas.

I have not submitted these comments as a potential party in any future proceedings regarding this matter, but rather on an amicus basis. Any conclusions and recommendations contained herein are my own and do not reflect the views of my employer who is not familiar with any details of the Holcim Project.

I commend the MDNR for the in-depth review conducted in this project and the level of public review afforded. Feel free to contact me at aalinero@comcast.net and continue to advise me of the status of this permitting matter.

Sincerely

A. A. Linero, P.E.

Attachments (I, II, and III)

Cc: Kyra.Moore@dnr.mo.gov
Ilona.Szednyj@umweltbundesamt.at
Norbert.Haug@uba.de
Per.Junker@miljo.stockholm.se

ATTACHMENT I – COMMENTS ON DRAFT PERMIT.

Following are key revised provisions from the draft permit in underlined and strikeout format as well as my supporting comments in Italics:

Draft Permit, Condition (2) Standards of Performance for BACT

(B) Oxides of Sulfur (SO_X) [BACT]

1. At all times the kiln system is in operation, the permittee shall use inherent dry scrubbing of the kiln system with no alkali bypass, and a continuous lime spray drying system ~~when the raw mills are not operating in order to meet BACT~~. Ducting of fine lime from the calciner to the upper preheater stages is also allowed to achieve the emission limits given below.

   Holcim installed a scrubber at Untervaz, Switzerland in the late 1980's and an activated carbon system at Siggenthal in the mid-1990's. The SO_2 system at Untervaz reduces emissions by 75 percent according to their 1996-98 Environmental Report. The same report gives emissions at Siggenthal of approximately 10 mg/m3 (roughly 0.05 lb/ton clinker).

   I am not advocating a large scrubber or an activated carbon filter. However, between reliance on "inherent dry scrubbing/occasional lime spray" and the advanced technologies mentioned above, a number of available options exist that would very likely be cost-effective. These include continuous ducting of fine lime from the area of the calciner to the upper sections of the preheater (e.g. F.L.Smidth DeSO_X Process) to reduce SO_2 emissions before they reach the raw mill. Continuous use of dry additive (lime) system is the most common strategy for reducing SO_2 in the German cement industry. It is practiced at 11 installations in Germany (source: Presentation by Martin Deussner, Heidelberger Cement, VDZ Congress 2002, Dusseldorf).

2. The permittee shall emit less than ~~694~~ 350 pounds of SO_2 per hour of operation based on a 30-day ~~12-month~~ rolling average. The MDNR reserves the right to require lower SO_2 emissions in the event this pollutant interferes with the SNCR system for NO_X discussed below.

   There is no reason why the proposed limit couldn't be halved by reasonable measures discussed above without having to install a large scrubber such as installed by Holcim and TXI at their Midlothian, Texas projects. There is also a need to reduce SO_2 emissions to minimize the potential to form ammonium sulfate species (contributors to plume opacity) upon injection of ammonia for NO_X control.

3. The permittee shall emit less than ~~1.26~~ 0.65 pounds of SO_2 per ton of clinker produced based on a ~~12-month~~ 30-day rolling average. The MDNR reserves the right to require lower SO_2 emissions in the event this pollutant interferes with the necessary Innovative Control Technology for NO_X discussed below.

   See comment above. At new kilns in Florida, with inherently low sulfur in the raw materials, BACT is 0.27 lb/ton clinker or less during averaging periods between 3 and 24 hours! The consideration here is for raw material sulfur that generally is not a problem in Florida.

(C) Oxides of Nitrogen (NO_X) [Initial BACT]

1. In order to meet BACT, the permittee shall use a combination of multi-stage combustion (MSC) calcination and low-NO_X burners when the kiln system is operating. Consistent with the description of the manufacturer's MSC product, one burner shall be installed near the kiln material inlet and a second burner shall be installed in the calciner section. Fuel shall be injected using the kiln inlet burner against the direction of flow of the kiln gases such that it is pyrolised under a reducing atmosphere into its gas phase. Introduction of hot tertiary combustion air shall be staggered such that calciner fuel is first burned using under reducing conditions then under oxidizing conditions.

   It is important to realize the full potential of the MSC product if that is the basis of the MDNR BACT decision. Numerous kilns have been installed in the United States without the kiln inlet burner although it is a key feature of the MSC technology. This may occur because the projects are able to achieve the relatively high values for NO_X for certain projects without having to install the burner. If installation as described is counterproductive (such as causing kiln inlet pluggage) then the BACT determination is incorrect or manufacturer's claims and literature are incorrect.

2. For the first 24 months after commencing operation, the permittee shall emit less than 1,653.4 pounds of NO_X per hour of operation based on a 30 day ~~12-month~~ rolling average.

   While averaging times in Florida are now on a 24-hour basis for new kilns, I respect the preference by MDNR for a longer averaging period. However a 30-day rolling average should be sufficiently long and will allow the agency to enforce the limit quickly following commencement of operation instead of having to wait one year to have 12 months of enforceable data. It would be fair to wait until 180 days after startup to actually begin enforcing the NO_X limit.

3. For the first 24 months after commencing operation, the permittee shall emit less than 3.0 pounds of NO_X per ton of clinker produced based on a 30 day ~~12-month~~ rolling average.

4. After the initial 24 months of operations, the permittee shall emit less than 1,350 ~~1,543.2~~ pounds of NO_X per hour of operation based on a 30 day ~~12-month~~ rolling average.

   See next comment.

5. After the initial 24 months of operations, the permittee shall emit less than 2.45 ~~2.8~~ pounds of NO_X per ton of clinker produced based on a 30-day ~~12-month~~ rolling average.

   *The Florida Rock cement kiln with the Polysius MSC design has a 30-day limit of 2.45 lb/ton of clinker. The new Suwannee American Plant has a **24-hour** limit of 2.9 lb/ton and has been averaging emissions approximately equal to those from Florida Rock on a 30-day basis. The Suwannee kiln has been in operation for a little over one year. They have not yet installed the kiln inlet burner to possibly achieve even lower emissions. The Florida DEP will revisit the present BACT limit after some additional data collection. The emissions at the Suwannee American Plant can be viewed at www.suwanneecement.com/Permit.htm and were 2.42 lb/ton of clinker on a 24-hour basis at the time of this writing.*

Titan America will start up a new kiln in Miami at Tarmac Pennsuco. That project netted out of PSD, but the kiln has a 12-month non-BACT limit of 2.38 lb/ton of clinker.

(D) Carbon Monoxide (CO) [BACT]

1. The permittee shall use good combustion practices and selective quarrying at all times in order to meet BACT.

2. The permittee shall emit less than 3,307 pounds of CO per hour of operation based on a 30-day ~~12-month~~ rolling average.

   This limit should be reconsidered and reduced. The staggered injection of tertiary air from the kiln hood and clinker cooler will promote much greater burnout than suggested by this standard. The final step in the MSC system should insure much lower CO levels. I do note that the TXI project went as far as installing regenerative thermal oxidation (RTO) units to avoid emitting significant emissions of CO and VOC thus avoiding BACT. I recommend that MDNR gather CO data from new kilns throughout the country that employ hot tertiary air systems and reconsider this limit.

3. The permittee shall emit less than 6.0 pounds of CO per ton of clinker produced based on a 30-day ~~12-month~~ rolling average.

   See previous comment.

4. The permittee shall operate continuous CO emission monitors to measure, record and report CO emissions from the in-line kiln/raw mill and coal mill exhausts.

   This is an excellent idea. Perhaps the data collected can be used to revise the limit downward after startup.

(E) Volatile Organic Compounds (VOC) [BACT]

1. To meet BACT, the permittee shall use good combustion practices, specify low oil content in any mill scale, ash, and other raw materials imported and selective quarrying at all times.

2. The permittee shall emit less than 182 pounds of VOC per hour of operation based on a 30-day block average.

   See comment below.

3. The permittee shall emit less than 0.33 pounds of VOC per ton of clinker produced based on a 30-day block average.

   For reference Florida Rock, Suwannee American, and Rinker Miami have VOC limits of 0.12 on a 30-day average. They pay very close attention to the off-site raw materials procured in order to comply with the stringent VOC limits. As mentioned above, TXI installed an RTO to avoid VOC; however I don't recommend this strategy for this project. Consideration should be given to reducing the VOC BACT value.

Draft Permit, Condition (3) Standards of Performance for ICT

(A) Oxides of Nitrogen (NO_X) [SNCR as Final BACT ~~ICT~~]

1. ~~After initiation of the ICT program and in addition to BACT, which is multi-stage combustion and low-NO_x burners, the~~ The permittee shall also use a~~n ICT,~~ selective non-catalytic reduction (SNCR) system, when the kiln system is operating, and no later than 24 months after commencing operations.

   BACT may well include SNCR based on discussion above. There is no need to call it ICT because it has demonstrated beyond a doubt at dozens of kilns in Europe. It is certainly fair to provide a period of optimization such that the capabilities of MSC can be determined and then the capabilities of the combined MSC/SNCR strategy can be optimized.

   A real ICT might be use of SCR as discussed in the comments on the technical report below. Such a unit has been commercially demonstrated at only one facility in Europe and might require construction and operation of an on-site pilot plant before a final SCR unit is designed for the present project.

2. The permittee shall commence testing and evaluation of the SNCR ~~ICT~~ no later than 24-months after kiln system start-up.

3. After initiation of the SNCR ~~ICT~~ program, the permittee shall emit less than 1,102 ~~1,322.7~~ pounds of NO_X per hour of operation based on a 30-day ~~12-month~~ rolling average.

   See comment below.

4. After initiation of the SNCR ~~ICT~~ program, the permittee shall emit less than 2.0 ~~2.4~~ pounds of NO_X per ton of clinker produced based on a 30-day ~~12-month~~ rolling average. The MDNR reserves the right to require lower NO_X emissions to the extent that this can be accomplished without adversely impacting plume visibility.

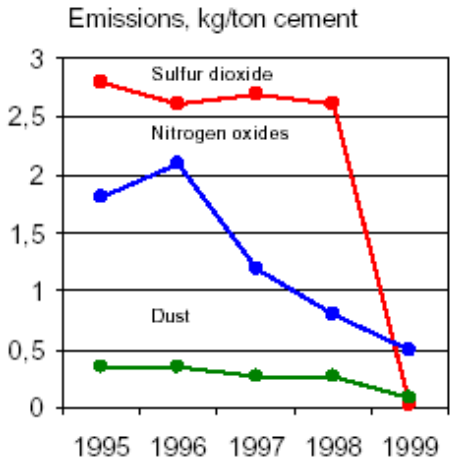
   As mentioned above, limit ought to be about 2.45 by MSC alone based on Florida Rock and Suwannee American experience and Titan design. An SNCR system on top of the MSC should yield significant reductions without injection of ammonia at rates that will make enough ammonia available to cause plume visibility.

   The initial limit I recommend above is based on a based on a very modest reduction (beyond MSC) of only 17 percent. It is easy to get quotes for such modest reductions.

   It is noted that tests were conducted on several Polysius kilns with MSC technology to see if further emissions reductions are possible with SNCR in combination with MSC. I refer the reader to a paper by Holcim's supplier, Polysius (Source: Rose, Adler, and Erpelding - NO_X Abatement with SNCR process in Kiln Plants with Staged Combustion). Values well below 2.0 lb/ton of clinker were readily achieved without operational problems. The abstract follows:

"The combination of staged combustion with the injection of ammonia water was investigated in three rotary kiln plants of different sizes which each had a modern NO_X abatement system using the PREPOL-MSC process. The investigations in the three kiln plants gave results which, in principle, were comparable. High abatement rates were achieved although the efficiency of the process was different at the three plants. Measurements of the generation of CO and NH_3 as secondary emissions, and assessment of the economic viability showed ***the great benefits of the MSC/SNCR combination****" (emphasis added).*

It is also noted that the SCANCEM Slite kiln in Gotland, Sweden is a precalciner kiln. NO_X emissions were successfully reduced there by approximately 80 percent to the Swedish requirement of 200 milligram per cubic meter (approximately 1 lb/ton of clinker). The source is a paper by Mr. Per Junker of the governing regulatory agency as well as SCANCEM's annual reports. Following is a graph showing how they reduced both NO_X and SO_2 at the existing kiln to meet Swedish government requirements. SO_2 emissions are much lower than the planned Holcim project. Multiply values by factor of 2 to calculate equivalent lb/ton of clinker values.



Reduction at SCANCEM Slite (source P. Junker, Gottland County, Swedish EPA)

I am not recommending anything like the SCANCEM Slite scenario, but I believe lower values than proposed for the Holcim Lee project are readily achievable and cost-effective. You may contact Mr. Junker at per.junker@miljo.stockholm.se

5. The permittee shall submit for department approval a SNCR ~~ICT~~ testing and evaluation protocol at least 6 months prior to commencing the evaluation period.

   Time is needed for the MDNR to review the protocol and make recommendations to insure the program is actually designed to minimize NO_X emissions so that MDNR can set a final cost-effective NO_X limit.

6. The department may grant a term of up to two (2) ~~five (5)~~ years for the testing and evaluation of SNCR ~~ICT~~.

It would appear that two years ought to be sufficient time to test and evaluate a technology that has already been installed at over two dozen kilns in Europe alone. Five years would make sense if the ICT were an SCR unit. In that case, it could take that long to very comfortably evaluate operation of the MSC, determine initial gas characteristics, build and operate an SCR pilot unit, and finally build and optimize a commercial installation such as the one at Solnhofer Portland in Germany.

7. The permittee shall operate continuous NO_X emission monitors to measure, record and report NO_X emissions.

ATTACHMENT II – COMMENTS ON PROJECT REVIEW

Following are my comments regarding key issues from the MDNR Project Review.

Oxides of Sulfur (SO_2) (beginning Page 27 of 79)

With reference to the following statement: "Lime spray drying, when the in-line raw mills are in operation, is also considered infeasible because lime spray drying would duplicate the IDS not provide further control."

The statement is questionable. Certainly some kind of lime injection, spraying, or other manner of introducing lime into the overall pyroprocessing system will provide additional SO_2 reduction without necessitating the construction of a large scrubber. The main Inherent Dry Scrubbing (IDS) is generally considered to be a number of complex reactions taking place in the kiln and calciner. This insures that SO_2 produced by fuel burning in the kiln and calciner gets tied up in an internal cycle and ultimately transformed into forms that get incorporated into the clinker.

The raw mill when operable does accomplish some removal primarily for SO_2 generated (roasted) from sulfide-containing raw materials (such as pyrites) as they progress downward through the preheater. This so-called IDS is not anywhere as efficient as the kiln/calciner IDS. This is well documented (e.g. Miller and Hawkins – Formation and Emission of Sulfur Dioxide in the Cement Industry, PCA R&D SN 2620a).

While the conditions in the raw mill provide some removal of SO_2 by raw material limestone ($CaCO_3$) in the presence of moist conditions, a good rate for this type of scrubbing is only on the order of 50 percent and not representative of BACT. Addition of lime at appropriate points in the process will not defeat the IDS credited to the raw mill, but will actually result in a substantial improvement in overall SO_2 removal without the need to install large scrubbers. Hydrated lime injection is practiced at 11 German kilns and not only during the times that the raw mill is off. Furthermore, there are designs (such as the FLS $DeSO_X$ scheme) that use a duct that moves small amounts of finely divided lime from the calciner to the upper levels of the preheater to "extend" the IDS features of the calciner.

As mentioned in the comments to the draft permit conditions, this option needs to be left open because insufficient SO_2 removal can interfere with the NO_X control strategy if there are excessive ammonia emissions.

According to a recent study by the European Commission (Reference Document on Best Available Techniques in the Cement and Lime Manufacturing Industries, March 2000), "SO_2 reductions of 60 to 80 percent can be achieved by absorbent injection in suspension preheater systems kiln systems. With initial levels not higher than 400 mg/m3 (1.8 lb/ton clinker) it is theoretically possible to achieve around 100 mg/m3 (~0.45 lb/ton clinker)."

One recommendation would be to contact suppliers such as Envirocare and request a budgetary cost estimate for their Micromist ML Semidry Injection system. This system relies on use of extremely fine mist to maximize SO_2 capture and subsequent removal. They would undoubtedly respond with a proposal to further reduce SO_2 emissions whether the raw mill is on or off. These kinds of systems are also designed to deal with reactive plume problems that potentially arise when ammonia (natural or from an SNCR system) and SO_2 are present.

Holcim can incorporate the FL Smidth DeSO$_X$ system mentioned above or ask Polysius to come up with something similar. The system does not require additional reagents and is largely a problem of ducts and pressure drop considerations.

It is recommended that MDNR carefully review what was done at the Ash Grove Chanute project for SO_2 control without a large wet scrubber as it could very well provide insight on possibilities for proper SO_2 control. I believe it incorporated the DeSO$_X$ technology and the Micromist System. I'm not certain what SO_2 levels are achieved at Chanute. That is less important than the percent of additional SO_2 removed beyond raw mill IDS. In any event, the technology certainly sounds superior to what will be installed by Holcim. The cost will certainly not approach the figure of $13,000^+$/ton removed claimed for the Holcim project when using a wet scrubber.

Oxides of Nitrogen (NO_X) (beginning Page 29 of 79)

With reference to the following statement: "A pilot testing installation has been made at one plant in Solnhofer, Germany."

This statement is out of date. The present installation is not a pilot scale experiment but a commercial scale project with about 24,000 hours of operation.

With reference to the following statement: "The claim of ninety percent (90%) NO_X removal efficiency was found to be unsupported or inaccurate, as the annual NO_X emissions from the Solnhofer cement plant were seen to have only reduced forty percent (40%) from their pre-SCR baseline amounts."

This statement while conceivably true does not tell the complete story. The Solnhofer unit is typically operated with only sufficient ammonia injection to meet 500 mg NO_X/m (2.3 lb NO_X/ton clinker). The SCR unit is operating with catalyst installed in only three of six available sections. There is no reason for them to inject more ammonia than the amount needed to meet their limits regardless of equipment capabilities.

There is a sufficient body of information available that supports the premise that emissions of 0.5 to 1 lb/ton of clinker are achievable by SCR.

With reference to the following statement: "Neither the Solnhofer facility, its SCR demonstration project vendors, nor the German government authorities have published any information as to long-term operational results, maintenance requirements, operating time statistics, etc."

The author of this statement may believe it but a persistent effort would reveal more. I refer MDNR to a document co-authored by a representative of the Solnhofer facility, a representative from Lurgi, and a representative from the German EPA (Samant, Sauter, and Haug, New Developments of High Dust SCR technology in the Cement Industry. Results of Pilot Tests and Development State of a Full Scale SCR Unit. Paris 2001 NO_X Conference). Based on pilot tests conducted in 1997-99 the authors conclude that reductions of 90 percent are possible with low ammonia to NO_X injection ratio and low ammonia slip (and thus low reactive plume formation potential).

It might be true that the authors have not published a follow-up paper, but that is not a requirement. If the project had failed, it would be widely reported. If so, the German-based manufacturer for the Holcim kiln would be easily capable of providing such proof to help their customers to dismiss these options in the United States. To say, in effect, that the original authors haven't published anything lately is not a reliable rationale.

I occasionally contact Dr. Norbert Haug of the German Umweltbundesamt (their EPA who helped fund the effort) to find out how the commercial installation is doing. For example in May 2002 he communicated to me that "the SCR in Solnhofen works in an excellent manner." At that time the full scale installation had at least a full year of operation. According to the 2001 – 2003 Activity Report of the German Cement Works Association/Research Institute of the Cement Industry, "after one year of operation, the loss of catalyst activity was fairly low." If the project were experiencing problems, the Institute would certainly have highlighted the matter to its member companies.

The Austrian Umweltbundesamt (EPA) sent representatives to visit the Solnhofer to find how the facility was doing in July 2003. At that time the full scale installation had logged 18,000 hours of operation. I have attached their report (Attachment III) in German that I didn't have time to translate right now. However some of the relevant sections are translated approximately as follows:

"The reactor in the plant can be equipped with six catalyst sections of which three layers are in use. With these three, 500 mg NO_X/Nm^3 (2.3 lb/ton of clinker) and less than 1 mg NH_3/Nm^3 are emitted. A reduction to 200 mg/Nm^3 (0.9 lb/ton) is possible by variation of the NH_3 use. The actual working time of the catalyst is at present at approximately 18,000 hours with an expectation of another further 3-4 years."

I have been in contact with one of the members of the Austrian team, Ms. Ilona Szednyj, Engineer. MDNR can contact her (or team member, Dr. Ilse Schindler) and she (they) might be able to give a more objective picture. Ms. Szednyj's e-mail address is ilona.szednyj@umweltbundesamt.at

No recent kiln in the U.S. has been permitted with a NO_X value less than 2 lb/ton of clinker on any averaging time. It would be prudent to try out the SNCR, see what that can accomplished and forego the debate on SCR and whether it works or whether it achieves 0.5 or 1, or 2 lb/ton of clinker.

With reference to the following statement: "Designing for a nonexistent (preconstruction) cement kiln gas stream (even if short-term variability were not an issue) is made more difficult because the actual gas stream can not be tested and analyzed."

The irony of this statement is that applicants contemplating control equipment at existing facilities often claim that it would be much less expensive to design and include add-on control equipment into a new project than to conduct a retrofit. It would be possible to conduct a satisfactory pilot scale experiment such as conducted at Solnhofer and follow it with a commercial installation.

Such an approach might be a better example of ICT than the SNCR project. It could certainly be conducted within the time frame that MDNR is willing to grant for the SNCR experiment, which doesn't start until two or more years after startup.

It is obvious that catalyst supplier KWH and control equipment designer Lurgi prefer to go through a pilot scale followed by commercial installation like they did at Solnhofer Portland. That is reasonable for this situation. These firms would undoubtedly be very interested under an ICT program including pilot experiment followed by commercial installation.

Here a pilot scale experiment would not mean the technology is not feasible. It only means that it is prudent to try out a few catalysts on a "slip stream", determine which ones work best, and then construct the full unit in accordance with the findings.

With reference to the following statement: "Because SCR failed to meet even one of the BACT criteria for availability, the permitting authority considers SCR technically infeasible at this time."

It is actually clear that SCR is technically feasible and requires only the development of some site specific characteristics (after startup in the MSC phase) to be successful. This statement of failure can affect decisions in Non-attainment areas where cost is not supposed to be a factor. This statement would be used to dismiss SCR everywhere without sufficient justification.

Again, I am not necessarily recommending this road, but feel it is important to provide a better rationale than the one given for dismissing SCR for NO_X control at cement plants. The basis of such a rationale could be the cost comparison given in Attachment III that gives the capital cost of an SCR system at 2.5 million Euros versus the capital cost of SNCR at 1 million Euros for a half-million metric tones per year plant.

ATTACHMENT III – AUSTRIAN EPA NEWSLETTER ON SCR

The following newsletter dated July 7, 2003 was prepared by the Austrian Umweltbundesamt (EPA). It followed a visit by Dr. Ilse Schindler and Ms. Ilona Szednyj, Engineer to Solnhofer Portland Cement in Germany to inquire about the status of the first commercial application of an SCR system at a cement plant, including the preliminary pilot scale unit and experimentation. Cost comparisons with SNCR are given. Ms. Szednyj can be contacted at: ilona.szednyj@umweltbundesamt.at

Erste Anlage zur katalytischen Entstickung in einem Zementwerk

(Translation: First Catalytic Denitrification Unit at a Cement Plant)

(21.7.2003) Die Reduktion von Stickoxiden ist ein wesentliches Anliegen der Europäischen Umweltpolitik. Die Emissionen dieser Vorläufersubstanz für bodennahes Ozon sollen deutlich vermindert werden. Das Umweltbundesamt setzt sich seit Jahren für den Einsatz der SCR Technik bei Hochtemperaturprozessen wie z.B. in Kraftwerken, Zement- und Glasanlagen ein.

Das Zementwerk Solnhofen (Deutschland), der Solnhofner Portland Zementwerke AG, hat als weltweit erster Standort in der Zementindustrie einen Katalysator zur Entstickung eingesetzt.

Das Zementwerk Solnhofen (Deutschland), der Solnhofner Portland Zementwerke AG, hat als weltweit erster Standort in der Zementindustrie einen Katalysator zur Entstickung eingesetzt. Dr. Ilse Schindler und DI Ilona Szednyj, beide Expertinnen des Umweltbundesamtes, hatten die Möglichkeit am 2. Juli 2003 dieses Werk zu besuchen und aus erster Hand Informationen über die erste SCR Betriebsanlage zu bekommen. In einem ausführlichen Gespräch und bei einem Rundgang durch die Anlage konnten technologische Fragestellungen ausführlich erörtert werden. Wesentliche Informationen über die Anlage sind nachfolgend dargestellt.

Technologie der Zementherstellung

Die Herstellung von Zementklinker im Drehrohrofen mit vorgeschaltetem Zyklonvorwärmer und nachgeschaltetem Klinkerkühler ist weit verbreitet und wird auch bei der Solnhofer Portland Zementwerke AG eingesetzt.

Bei der thermischen Behandlung des Rohmehls im Ofen beträgt die Temperatur in der Sinterzone ca. 1.450°C und die der für die Bildung der Klinkerminerale erforderlichen Verbrennungsgase 2.000°C. Dabei entstehen verfahrensbedingt Stickoxide, die durch primäre oder sekundäre Maßnahmen gemindert werden können. Der Emissionsminderungsgrad wird wesentlich durch gesetzliche Rahmenbedingungen bestimmt.

Entwicklung des Grenzwerts für NOx in Deutschland und Vergleich mit Österreich

In der TA Luft 1986 wurden für Zementwerke mit Zyklonvorwärmer mit Abwärmenutzung unter dem Dynamisierungsvorbehalt 1.300 mg NO_2/Nm³ festgelegt. Zur Konkretisierung der Dynamisierung legte der "Länderausschuss für Immissionsschutz" schärfere Grenzwerte fest und es wurden Emissionsgrenzwerte von 500mg/Nm³ für Neuanlagen und 800 mg/Nm³ gefordert. Mit der neuen TA Luft (gültig seit Oktober 2002) sind die Emissionen, nach einer Übergangszeit, auch für Altanlagen mit 500 mg/Nm³ begrenzt, wobei bei der Emissionsminderung feuerungstechnische, und andere dem Stand der Technik entsprechende Maßnahmen auszuschöpfen sind.

In Österreich liegen die Grenzwerte für NO_x - seit der Umsetzung der EU Richtlinie über die Verbrennung von Abfällen durch die Abfallverbrennungssammelverordnung - für neue Zementanlagen, die Abfälle verbrennen bei 500 mg/Nm³; für Altanlagen bei 800 mg/Nm³ und für Altanlagen ab dem 31.10.2007 ebenfalls bei 500 mg/Nm³.

Andere erprobte Maßnahmen für NOx Minderung in Solnhofen

Entsprechend der Entwicklung des NO_x Grenzwerts wurden 1993 im Zementwerk Solnhofen erste Maßnahmen zur NO_x Minderung getroffen. Zum Einsatz kamen Primärmaßnahmen wie Low NO_x Brenner oder Ionisationsgeneratoren, wie sie bei kleineren Brennern in Kraftwerken eingesetzt werden. Der Einfluss dieser Maßnahmen auf die NO_x Minderung blieb aber begrenzt. Daran anschließend wurde die Möglichkeit der NO_x Reduktion durch Grünsalz (Eisen(II)sulfat) erforscht. Die erreichte NO_x Reduktion lag zwischen 30 und 60% mit Harnstoff als Reduktionsmittel. Nach der Entdeckung von Grünsalz zur Cr Reduktion kam es zu einer deutlichen Preissteigerung des Eisensulfats und damit zu einem Anstieg der Betriebskosten für die NO_x Minderung.

SCR Pilotanlage in Solnhofen

Als Alternative wurden Versuche zum Einsatz der SCR Technologie gestartet. Die Pilotanlage wurde nach der letzten Zyklonstufe parallel zum Abgaskanal installiert und ein Teilstrom des Abgases aus der Betriebsanlage (500-3000 m³/h) über den Reaktor geleitet.

Aus Gründen der Wirtschaftlichkeit wurde die High Dust Variante gewählt, da die Temperatur der Abgase nach der letzten Zyklonstufe in der Regel der Reaktionstemperatur des Katalysators entspricht, wodurch kein zusätzliches Aufheizen erforderlich ist.

Über die Art und Form des Katalysatormaterials, das für den Einsatz in Zementwerken geeignet ist, lagen zum damaligen Zeitpunkt nur spärliche Untersuchungsergebnisse vor und diese mussten durch die Pilotanlage quantifiziert werden. Dazu wurde der Reaktor in der Pilotanlage mit vier voneinander getrennten quadratischen Kanälen mit separaten Messstutzen ausgerüstet. Die Reaktorauslegung mit 4 getrennten Kanälen in der Pilotanlage erlaubte die gleichzeitige Untersuchung von 4 Katalysatortypen. In den Versuchsreihen wurden Waben- und Plattenkatalysatoren mit verschiedenen Kanalweiten bei unterschiedlichen Raumgeschwindigkeiten (=Verhältnis Abgasvolumenstrom zu Katalysatorvolumen) hinsichtlich ihrer Druckverlusteigenschaften, Staubablagerungen, des NO_x Abbaus und NH_3 Schlupf getestet.

Es wurden Reinigungsintervalle festgestellt, die in großtechnischen Anlagen eingehalten werden können. Anhand der Ergebnisse der Pilotanlage wurde die Betriebsanlage ausgelegt.

Weltweit erste SCR Betriebsanlage in einem Zementwerk - Solnhofen

Der Bau der Betriebsanlage wurde im Rahmen des Programms zur "Förderung von Investitionen mit Demonstrationscharakter" des Bundesumweltministeriums geprüft und finanziell unterstützt. Die Anlage wurde dementsprechend auf der "sicheren Seite" ausgelegt und kann sowohl von oben nach unten als auch von unten nach oben angeströmt werden. Mit dieser Fahrweise sollte die Lebensdauer der Katalysatoren verlängert werden. Im Bypass besteht im Notfall die Möglichkeit eine Entstickung nach dem SNCR Verfahren zu betrieben. Die Vorrichtung ist vorhanden, allerdings ist diese Fahrweise - bedingt durch sichere und erfolgreiche SCR Anlage – noch nie betrieben worden.

Der Reaktor in der Anlage kann mit 6 Katalysatorlagen bestückt werden, wovon im derzeitigen Betriebszustand drei Lagen im Einsatz sind. Mit dieser dreier Bestückung werden derzeit weniger als 500 mg NO_x/Nm³ und weniger als 1 mg NH_3/Nm³ emittiert. Eine Reduktion der NO_x Emissionen auf 200 mg/Nm³ bei gleichbleibenden NH_3 Emissionswerten ist durch Variation der NH_3 Eindüsung möglich. Die Betriebsdauer des Katalysators liegt derzeit bei rund 18.000 Stunden im kontinuierlichen Betrieb und es wird seitens des Betreibers mit einer Standzeit von weiteren 3-4 Jahren gerechnet.

Nach Inbetriebnahme der Großanlage bereitete die hohe Staubbelastung (bis zu 100 g/m³) des Rohgases und der Standard Rußbläser, wie er in Kraftwerken eingesetzt wird, Probleme. Die Staubabreinigung des Katalysators wurde durch Verbesserung und Optimierung der Staubbläser (Rußbläser) beseitigt. Weiters konnte seit der Inbetriebnahme durch verschiedene Varianten der Abreinigung der Luftverbrauch zur Abreinigung von 5.000 m³/h auf derzeit 800-900 m³/h gesenkt werden. Weitere Optimierungsmaßnahmen werden derzeit untersucht und erprobt.

Die Entstaubung des Rauchgases wird nach dem Katalysator in einem Faserfilter durchgeführt, mit dem im Neuzustand Staubwerte von < 1 mg/Nm³ erreicht wurden.

NO_x Abbau und NH_3 Schlupf: Die NO_x und NH_3 Gehalte des Roh- und Reingases werden parallel kontinuierlich gemessen. Das Rohgas enthält, wie in den meisten Zementwerken eine Grundlast an NH_3 aus dem Rohmaterial.

Es wurde festgestellt, dass durch den vorhandenen Ammoniak ein NO_x Umsatz stattfindet und NH_3 im Reingas bis auf Werte < 1 mg/m³ abgebaut wird. Der NO_x Abbau ist von der Stöchiometrie NH_3 / NO_x abhängig. Durch die Einstellung der vorgegebenen Stöchiometre und dem NO_x Sollwert kann durch Regelung der Ammoniakzudosierung beliebig NO_x mit sehr geringem NH_3 Schlupf abgebaut werden. Im Staub nach dem Reaktor konnte keine Anreicherung von Ammoniumverbindungen, festgestellt werden.

Abbau anderer Schadstoffe: Bei den Versuchen in der Pilotanlage wurde außer dem NO_x Abbau auch in einem geringen Umfang auch Schwefeldioxidabbau und 50-70 % Kohlenwasserstoffabbau festgestellt. Diese Beobachtung wurde in der Betriebsanlage bestätigt. Eine kontinuierliche Quecksilbermessung ist vorhanden.

Ökonomischer Vergleich SCR – SNCR [HAUG et al., 2002]

Für einen Kostenvergleich der SNCR und SCR Technologie bzw. die Wirtschaftlichkeit wurden Investitionskosten (Eckdaten: Tabelle 1) sowie Betriebskosten d.h. NH_4OH Verbrauch, Katalysatorwechsel, Stromverbrauch und Instandhaltungskosten für 3 Fälle (Tabelle 2) berechnet.

Tabelle 1: Eckdaten für Kostenberechnungen

Abgasvolumen

100.000 Nm^3/h

Klinkerproduktion

480.000 t/a

Anlageverfügbarkeit

7.500 h/a

Investkosten SCR

2,5 Mio EURO

Investkosten SNCR

1 Mio EURO

Katalysatorlebensdauer

3-4 a

Tabelle 2: 3 Szenarien zur Berechnung der Wirtschaftlichkeit von SCR /SNCR Anlagen

Fall Nr.	Rohgas [mg m-3]	Reingas [mg m-3]	Entlastung der Umwelt [t a-1]
1	1200	800	300

2

1200

500

525

3

1200

200

750

Die Berechnungen zeigten, dass bei Fall 1 das SNCR Verfahren die wirtschaftlich günstigere Variante ist. Bei Fall 2 ist das SCR Verfahren nicht nur wirtschaftlich, sondern auch im Hinblick auf den NH_3 Schlupf ökologisch. Bei Fall 3 ist das SCR Verfahren die wirtschaftlich und ökologisch beste Lösung.

Die zitierten Berechnungen wurden anhand einer Katalysatorlebensdauer von 3-4 Jahren durchgeführt. Unter Berücksichtigung der derzeit erreichten 18.000 Betriebsstunden und der weiter prognostizierten Lebensdauer des Katalysators von 3-4 Jahren wird die Schere zwischen SNCR und SCR Anlage zu Gunsten des SCR Verfahrens weiter vergrößert. Eine dahingehende Studie wird derzeit vom Umweltbundesamt Berlin erarbeitet.

In allen 3 berechneten Fällen liegt der NH_3 Schlupf bei < 1mg/m³. Beim SNCR Verfahren ist mit höherem NH_3 Schlupf besonders bei Fall 3 zu rechnen und hiermit die Umwelt mit NH_3 Aerosolen belastet. Weiters wird beim SNCR Verfahren die NH_3 Emission aus dem Rohmaterial, die in den meisten Zementwerken vorhanden sind, nicht abgebaut. Die SCR Technologie bietet die beste Möglichkeit den NH_3 Anteil aus dem Rohmaterial zu verwerten.

Ergebnisse der High Dust Betriebsanlage bei der Solnhofer Portland Zementwerke AG und Kostenvergleich zeigen, dass die SCR Technik im Vergleich zu SNCR nicht nur wirtschaftlich sondern auch ökologisch die bessere Technologie für die NO_x Minderung in der Zementindustrie ist.

HAUG, N.; SAUTER, G.; SAMANT, G (2002): Einsatz der High Dust SCR Technologie in der Zementindustrie. VDI Vortrag 2002.

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VIA FACSIMILE (573) 751-2706 AND FEDERAL EXPRESS

March 3, 2004

Ms. Leanne Tippett
Missouri Department of Natural Resources
Air Pollution Control Program
P. O. Box 176
Jefferson City, MO 65102-0176

RE: Holcim (US) Inc. - Lee Island Project
Comment on Preliminary Determination
Permit No. 2000-05-077

Dear Leanne:

We have received and begun reviewing the Preliminary Determination for the Holcim (US) Inc. ("Holcim") Lee Island Project issued by the Air Pollution Control Program ("APCP") on February 22, 2004. One issue of particular concern with the Preliminary Determination is the air-quality analysis based short-term emission limits for carbon monoxide (CO) on the in-line kiln/raw mill system and coal mill system.

Special condition (4)(B) of the Preliminary Determination places 1-hour and 8-hour CO emission limits on the in-line kiln/raw mill system and coal mill system that are equivalent, on an hourly basis, to the proposed annual emission limit for the facility of 6.0 lbs/ton of clinker produced. The in-line kiln/raw mill system emission limit is 2,976.3 lb/hr and the coal mill system emission limit is 331.0 lb/hr.

Holcim recognizes that short-term emission limits for many pollutants are often warranted to protect against National Ambient Air Quality Standard (NAAQS) violations, Prevention of Significant Deterioration (PSD) increment violations, or other air quality related concerns. In this case, however, no such concern exists. The approved modeling analysis for CO showed that ambient concentrations of CO do not approach modeling significance levels, let alone the NAAQS limits. Having insignificant impacts for CO, a NAAQS compliance analysis is not necessary. Holcim therefore believes that such short-term limits for CO are not justified and should not be included as permit conditions.

To support the assertion that short-term limits for CO are not necessary to be protective of air quality, Holcim performed a comparative analysis of the in-line kiln/raw mill system and coal mill system with emission rates that are 10 times greater than those used in the application and identified in the APCP-approved air quality analysis. The results of the dispersion modeling analysis clearly indicate that, even at 10 times the proposed emission rate, CO emissions from the Lee Island plant will not cause or contribute to a NAAQS exceedance. In fact, even at this unrealistically high emission rate, the NAAQS for CO are not approached. Therefore, on the basis of the comparative analysis, Holcim requests that the short-term CO limits be removed from the permit.

The modeling analysis was based on the APCP-approved CO modeling files that were submitted with Addendum No. 3 to the Prevention of Significant Deterioration and National Emission Standards for Hazardous Air Pollutants permit application. Attachment A describes this comparative dispersion modeling analysis for CO.

If you have any questions, please contact Dan Carney of Schreiber, Yonley & Associates at (636) 349-8399 or me at (636) 933-8170.

Sincerely,

Eric L. Ervin
Project Manager

Attachment A

Carbon Monoxide Comparative Modeling Analyses

In support of March 3, 2004 Comment Letter to Permit No. 2000-05-077

Prepared by:

Schreiber, Yonley & Associates

for

Holcim (US) Inc.

March 3, 2004

Methodology

The methodology used in this modeling analysis is, to a large extent, the same as that presented in and used in Addendum No. 3. The following paragraphs present a brief summary of the modeling methodology for this analysis, pointing out any differences between the two analyses.

The industrial source complex short-term (ISCST3) model Version 00101 was used to determine ambient impacts. The model was executed using regulatory default options, elevated terrain receptors, and rural dispersion mode. The meteorological data used for the analysis consisted of surface data collected from 1983 through 1987 at Lambert Field in St. Louis (Station #13994) and mixing height data collected during the same period at the National Weather Service station in Salem, Illinois (Station #03879). As discussed in Addendum No. 3 and as used in the APCP-approved modeling analysis, the meteorological data was modified such that all mixing heights less than 2.1 meters were adjusted to 2.1 meters.

Receptor elevations were imported into the ISCST3 model using digital elevation model (DEM) United States Geological Survey (USGS) 7.5-minute series maps. The elevations were determined from the Universal Transverse Mercator (UTM) coordinates for each receptor. Table 1 identifies the USGS DEM maps used to determine receptor elevations.

TABLE 1
USGS DEM MAPS

Ames, IL	Greeley, MO	Pacific, MO
Anthonies Mill, MO	Halifax, MO	Paderborn, IL
Banner, MO	Herculaneum, MO	Palmer, MO
Belews Creek, MO	Higdon, MO	Parker Lake, MO
Belgrade, MO	House Springs, MO	Patton, MO
Berryman, MO	Hurricane, MO	Perryville West, MO
Bloomsdale, MO	Huzzah, MO	Potosi, MO
Bonne Terre, MO	Iron Mountain Lake, MO	Prairie du Rocher, IL
Bunker, MO	Irondale, MO	Redbud, IL
Cahokia, IL	Ironton, MO	Renault, IL
Cedar Hill, MO	Johnson Mountain, MO	Rhodes Mountain, MO
Centerville, MO	Johnson Shut Ins, MO	Richwoods, MO
Cherokee Pass, MO	Kaskaskia, IL	Rock Pile Mountain, MO
Coffman, MO	Kirkwood, MO	Scopus, MO
Columbia, IL	Knob Lick, MO	Sedgewickville, MO
Corridon, MO	Labadie, MO	Selma, MO
Courtois, MO	Lake Killarney, MO	Shirley, MO
Cyclone Hollow, MO	Lawrenceton, MO	Spring Bluff, MO
Danby, MO	Leslie, MO	Sprott, MO
Davisville, MO	Lesterville, MO	St. Clair, MO
De Soto, MO	Lithium, MO	Stanton, MO
Des Arc Northeast, MO	Lonedell, MO	Ste Genevieve, MO
Ebo, MO	Manchester, MO	Sullivan, MO
Edgehill, MO	Marquand, MO	Tiff, MO
Eureka, MO	Maxville, MO	Union, MO
Evansville, IL	Meramec State Park, MO	Valmeyer, IL
Farmington, MO	Millstadt, IL	Viburnum East, MO
Festus, MO	Mineral Point, MO	Viburnum West, MO
Flat River, MO	Minnith, MO	Vineland, MO
Fletcher, MO	Moselle, MO	Wachita Mountain, MO
Fredericktown, MO	New Athens West, IL	Washington East, MO
Freeburg, IL	New Haven, MO	Washington West, MO
French Village, IL	O'Fallon, IL	Waterloo, IL
French Village, MO	Oakville, MO	Webster Groves, MO
Glover, MO	Oates, MO	Weingarten, MO
Graniteville, MO	Old Mines, MO	Womack, MO
Gray Summit, MO	Onandaga Cave, MO	

Receptors were set up on a Cartesian grid scaled by the UTM coordinate system. The property boundary was denoted with 50-meter spaced receptors. A fine grid (100-meter spacing) extended beyond the boundary for at least 500 meters in each direction. Medium grids (500-meter spacing) were extended beyond the fine grid an additional 2,000 meters. To be conservative, the coarse grids (1000-meter spacing) were expanded to extend beyond the

medium grid by 45 km to the North, 26 km to the East, 65 km to the South, and 73 km to the West. The model output files were checked to verify that no significant impact was predicted within 5 km of the extent of the coarse grid in any direction.

Addendum No. 3 indicated that all exhaust stacks at the Lee Island plant would be less than good engineering practice (GEP) stack height. Being less than GEP stack height, all exhausts are therefore acceptable as designed for inclusion in the analysis. No stack parameter changes to Lee Island plant sources are included in this modeling analysis. Therefore, the GEP stack height analysis presented in Addendum No. 3 is still valid.

Buildings and other structures that can contribute to downwash effects on point source emissions were accounted for in the analysis submitted with Addendum No. 3 and have likewise been accounted for in this analysis. Since no changes were made to the structures or point source parameters that are included as part of the Lee Island plant, the information presented in Addendum No. 3 is still valid.

Lee Island Emissions

The emission source parameters used in this analysis are identical to those listed in Addendum No 3 and the APCP-approved modeling analysis. The emission rates used in the analysis are listed in Table 2. The only difference between this analysis and the APCP-approved analysis is the specified emission rates for the in-line kiln/raw mill system and coal mill system.

TABLE 2
MODELED CO EMISSION RATES

Emission Point	Source	Emission Rate	
		lb/hr	g/s
EP49	In-Line Kiln/Raw Mill	29762	3749.9
EP115	Coal Mill	3310	417.1
EP74	Finish Mills 1 and 2	2.5	0.318
EP79	Finish Mills 3 and 4	2.5	0.318

NAAQS Inventory

The ambient air quality impact analysis submitted with Addendum No. 3 and approved by the APCP indicated insignificant off-property impacts for CO. As such, a NAAQS analysis was not required and NAAQS sources were not included in the model runs. As discussed later, this analysis will result in significant off-property impacts, resulting in a NAAQS analysis being required. The following paragraphs and tables present the NAAQS inventory sources used in the modeling analysis.

The Illinois NAAQS inventory approved for use by the Illinois Environmental Protection Agency was included in Appendix D of Addendum No. 3. Table 3 lists the approved Illinois NAAQS inventory.

TABLE 3
ILLINOIS POINT SOURCES OF CO

Model ID	UTM Coordinates			Emission Rate	Stack Parameters			
	X	Y	Elevation		Height	Temp	Velocity	Diam
	(m)	(m)	(m)	(g/s)	(m)	(K)	(m/s)	(m)
HERB1	744300	4259200	152	1.00E-02	6.1	519	2.43	0.6
WATLOO1	748400	4246400	152	2.20E-01	12.8	644	41.43	0.67
WATLOO2	748400	4246400	152	4.50E-01	12.8	672	42.67	0.67
WATLOO3	748400	4246400	152	4.40E-01	12.8	755	47.71	0.51
WATLOO4	748400	4246400	152	1.60E-01	12.8	644	47.93	0.45
SS1	747500	4246600	152	2.50E-01	10	294	0.1	0.1
ILMUN1	748400	4246450	152	5.68E+00	5.18	294	0.1	0.1
GILML1	775330.5	4199400	152	1.00E-02	13.72	294	0.75	0.91
STCLEM1	760830.5	4233000	152	1.20E-01	24.38	452	0.03	4.87
REDBUD1	760730.5	4233900	152	2.00E-02	10.67	616	57.67	0.36
REDBUD2	760730.5	4233900	152	6.00E-02	10.67	699	38.7	0.76
REDBUD3	760730.5	4233900	152	7.00E-02	10.67	699	47.67	0.51
REDBUD4	760730.5	4233900	152	7.20E+00	10.67	366	5.39	0.36
SS2	761030.5	4232500	152	1.60E-01	10	294	0.1	0.1
SPARCH1	787230.5	4222800	152	5.00E-02	6.1	1227	0.07	0.3
SPLIT1	786930.5	4222200	152	3.00E-02	5.49	294	27.18	0.3
SPLIT2	786930.5	4222200	152	9.00E-02	10	294	0.1	0.1
SPLIT3	786930.5	4222200	152	7.00E-02	6.71	577	5.32	0.76
SPLIT4	786930.5	4222200	152	2.00E-02	9.14	1255	4.12	1.06
SPARAC1	785630.5	4223500	152	5.00E-02	5.18	294	0.1	0.1
ILPOWB1	773130.5	4232200	152	4.66E+01	184.4	428	36.28	5.94
ILPOWB2	773130.5	4232200	152	4.66E+01	184.4	424	36.58	5.94
ILPOWB3	773130.5	4232200	152	5.70E-01	82.3	519	36.51	0.76
ILPOWB4	773130.5	4232200	152	4.66E+01	184.4	412	40.18	5.94
STANBL1	774130.5	4229500	152	2.00E-02	4.57	394	26.4	0.85
STANBL2	774130.5	4229500	152	6.00E-02	10	294	0.1	0.1
MEN1	773230.5	4199700	152	5.40E-01	18.29	422	6.07	1.06
MEN2	773230.5	4199700	152	9.10E-01	5.49	535	2.72	1.37
FREE1	768730.5	4257100	152	2.11E+00	9.14	699	39.84	0.54
FREE2	768730.5	4257100	152	4.72E+00	10	294	0.1	0.1
KERRY1	753800	4260800	152	1.00E-02	7.62	294	0.1	0.1
NEW1	771630.5	4245400	152	2.20E-01	10	294	0.1	0.1
SMITH1	762030.5	4254900	152	6.00E-02	10	294	0.1	0.1
REESE1	746300	4269200	152	4.00E-01	7.62	338	23.17	0.91
ILPOWF1	769130.5	4252900	152	7.00E-02	10	294	0.1	0.1
ILPOWF2	769130.5	4252900	152	1.00E-02	6.1	294	0.1	0.1
KOST1	754300	4266800	152	7.00E-02	6.4	505	4.4	0.7
MILLREN1	753900	4266800	152	4.00E-02	10	294	0.1	0.1
MACASPH1	745500	4260700	152	1.43E+00	11.58	427	12.66	1.61

MACASPH2	745500	4260700	152	1.00E-02	3.05	294	0.1	0.1
MLC1	752693	4221888	205.5	6.83E+00	38.1	505	10.3	2.13
MLC2	752693	4221888	205.5	6.83E+00	38.1	505	10.3	2.13
MLC3	752693	4221888	205.5	6.83E+00	38.1	505	10.3	2.13
MLC4	752693	4221888	205.5	6.83E+00	38.1	505	10.3	2.13

The APCP provided the Missouri NAAQS inventory for CO as well as for other pollutants. The CO NAAQS inventory information received from the APCP was directly incorporated into the modeling analysis with the following exceptions. Two facilities included in the original NAAQS inventory were removed from the analysis based on prior agreement with the APCP. The two facilities are LaRoche Industries, Inc. and Huffy Bicycle Company.

The velocity for source UEP2 was not specified in the NAAQS inventory information for AmerenUE provided by the APCP. For consistency, a velocity of 7.6m/s was taken from the APCP-approved SO_2 NAAQS inventory for UEP2 and used in the CO NAAQS analysis.

The temperature and velocity for all sources related to Saberliner Corporation (i.e., SABP1, SABP2, SABP3, SABP4, SABP5, SABP6, SABP7, SABP8) were not specified in the NAAQS inventory information provided by the APCP. To be conservative, a temperature of 298K and a velocity of 5m/s were used for each of the sources in the NAAQS analysis.

Tables 3 and 4 list the NAAQS inventory sources located with the State of Missouri that are included in the CO modeling analysis.

TABLE 4
MISSOURI POINT SOURCES OF CO

Model ID	UTM Coordinates			Emission Rate	Stack Parameters			
	X	Y	Elevation		Height	Temp	Velocity	Diam
	(m)	(m)	(m)	(g/s)	(m)	(K)	(m/s)	(m)
RIVP1	733000	4229000	121.9	3.05E+01	76.2	563.23	16.15	5.39
RIVP2	733000	4229000	121.9	1.89E-01	33.22	361.63	21.34	0.7
RIVP3	733000	4229000	121.9	1.89E-01	29.87	361.63	21.54	0.91
HERCP1	729600	4237680	125	1.09E-01	15.24	298	12.7	0.61
HERCP2	729600	4237680	125	6.35E-02	9.45	298	12.7	0.91
HERCP3	729600	4237680	125	2.42E-02	16.76	300.03	11.43	1.31
HERCP4	729600	4237680	125	2.42E-02	7.62	305.63	7.62	0.61
HERCP5	729600	4237680	125	6.80E-03	6.1	287.15	20.32	0.61
HERCP6	729600	4237680	125	2.62E-02	7.62	300.03	17.08	0.46
HERCP7	729600	4237680	125	1.21E-02	6.1	287.15	20.32	0.65
FREDP1	729400	4231000	121.9	7.71E+00	12.8	384.03	28.02	0.9
FREDP2	729400	4231000	121.9	1.17E-02	6.1	787.23	11.68	0.25
UEP1	739900	4223700	109	5.45E+01	213.36	406.43	24.99	8.84
UEP2	739900	4223700	109	6.21E-01	76.2	580.03	7.6	1.52
MISSP1	737800	4144600	200	1.06E+01	8.53	753.63	31.17	0.24
MISSP2	737800	4144600	200	1.98E-03	7.62	675.23	35.28	0.06
MISSP3	737800	4144600	200	2.15E-03	6.1	675.23	35.41	0.06
SABP1	771430.5	4194000	152	2.55E+00	7.32	298	5	2.16
SABP2	771430.5	4194000	152	4.61E-03	10.67	298	5	0.61
SABP3	771430.5	4194000	152	2.87E-03	10.36	298	5	0.61
SABP4	771430.5	4194000	152	5.77E-04	5.18	298	5	0.61
SABP5	771430.5	4194000	152	1.15E-03	7.62	298	5	0.61
SABP6	771430.5	4194000	152	3.45E-03	7.62	298	5	0.61
SABP7	771430.5	4194000	152	1.15E-03	8.53	298	5	0.61
SABP8	771430.5	4194000	152	2.30E-03	12.8	298	5	0.61
MLP1	757300	4206700	158	2.77E-01	23.16	521.23	4.04	3.23
MLP2	757300	4206700	158	3.46E-01	23.16	470.27	0.59	3.57
MLP3	757300	4206700	158	3.46E-01	23.16	470.27	5.67	3.47
MLP4	757300	4206700	158	7.88E+01	18.59	338.67	15.96	0.61
MLP5	757300	4206700	158	7.43E-02	15.54	361.63	13.61	0.82
MLP6	757300	4206700	158	6.32E-01	34.75	349.31	11	1.64
MLP7	757300	4206700	158	4.16E-01	34.75	345.95	8.15	2.08
MLP8	757300	4206700	158	1.09E-01	19.51	368.35	14.76	1.07
MLP9	757300	4206700	158	2.20E-01	16.46	361.63	24.82	1.07
GENP1	754800	4207400	106.7	1.79E+00	8.53	661.23	15.88	0.24
GENP2	754800	4207400	106.7	2.65E-03	4.88	647.23	2.79	0.43
GENP3	754800	4207400	106.7	9.04E-04	6.1	675.23	35.41	0.06
CHEMP 1	756400	4210514	165	2.98E+01	85.04	507.23	7.59	2.51
VESP1	717109	4196217	228.6	3.78E+00	24.38	322.43	9.24	2.13

FCCP1	725600	4183000	213.4	3.23E-01	57.3	353.23	2.64	2.13
FCCP2	725600	4183000	213.4	2.03E+00	57.3	353.23	3.96	2.13

TABLE 5
MISSOURI VOLUME SOURCES OF CO

Model ID	UTM Coordinates			Emission Rate	Release Height	Initial Sigma Y	Initial Sigma Z
	X	Y	Elevation				
	(m)	(m)	(m)	(g/s)	(m)	(m/s)	(m)
CHEMV 1	756400	4210514	165	2.54E-02	2.5	0.7	1.4

Significant Impact Determination

The significance determination was conducted as an integral part of the NAAQS analysis model runs by using a source group for the Lee Island plant emission sources. Lee Island sources included in the grouping were the in-line kiln/raw mill (EP49), finish mills 1 and 2 (EP74), finish mills 3 and 4 (EP79), and the coal mill (EP115). Table 6 presents the results of the significant impact determination.

TABLE 6
HIGHEST MODELED CO IMPACTS

Year	Maximum Modeled Concentration ($\mu g/m^3$)	
	1-Hour Averaging Period	8-Hour Averaging Period
1983	12,013	2,973
1984	12,995	4,086
1985	13,806	4,018
1986	12,109	3,853
1987	10,812	2,447
Maximum ($\mu g/m^3$)	13,806	4,086
Significant Impact Level ($\mu g/m^3$)	2,000	500

Significant off-property impacts are predicted for both averaging periods. Therefore, a NAAQS analysis is required for CO.

NAAQS Compliance Demonstration

A full impact analysis that included the emissions from nearby sources was performed to demonstrate compliance with the NAAQS for CO. Table 7 presents the results of the NAAQS analysis.

TABLE 7
CO NAAQS RESULTS

Year	Modeled Concentration* ($\mu g/m^3$)	
	1-Hour Averaging Period	8-Hour Averaging Period
1983	11,647	2,460
1984	12,957	2,324
1985	12,569	2,636
1986	12,016	2,167
1987	10,490	2,316
Maximum ($\mu g/m^3$)	12,957	2,636
Background Concentration ($\mu g/m^3$)	7,907	5,761
Total Concentration ($\mu g/m^3$)	20,864	8,397
Significant Impact Level ($\mu g/m^3$)	40,000	10,000

* High-second-high modeled impact.

As listed in Table 7, predicted impacts using the increased in-line kiln/raw mill system and coal mill system emission rates demonstrate compliance with the NAAQS for CO.

From: LISA M. SCHWENT (636)933-8170
HOLCIM (US) INC
2942 U.S. HIGHWAY 61

BLOOMSDALE, MO, 63627

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VIA FEDERAL EXPRESS

March 12, 2004

Ms. Leanne Tippett
Missouri Department of Natural Resources
Air Pollution Control Program
P. O. Box 176
Jefferson City, MO 65102-0176

RE: Holcim (US) Inc. - Lee Island Project
Comment on Preliminary Determination
Permit No. 2000-05-077

Dear Leanne:

This letter and its attachments represent a comment on the Holcim (US) Inc. Prevention of Significant Deterioration (PSD) Permit Preliminary Determination issued by the Air Pollution Control Program (APCP) for public notice on February 22, 2004.

Special condition (4)(E) of the Preliminary Determination requires Holcim to "...conduct and submit the results of the CALPUFF Class II PM_{10} modeling analysis to the department within three months after completion of the one (1) year of data collection. The CALPUFF Class II PM_{10} modeling analysis will be subject to the public participation procedures specified in 10 CSR 10-6.060 section (12), Appendix (B)."

Holcim has committed to completing the collection of a full year's worth of on-site meteorological data and submitting a modeling demonstration using the CALPUFF model. However, this submittal is not driven by a regulatory requirement. The requirements of 10 CSR 10-6.060 have been met with the APCP-approved modeling demonstration that used the Industrial Source Complex Short-Term (ISCST3) model.

Attached to this letter is a report entitled "Air Quality Modeling Report for the Holcim (US) Inc. Lee Island Project" completed by Earth Tech, LLC. This interim report analyzed seven (7) months of on-site meteorological data collected from May 1, 2003 to November 30, 2003 using the CALPUFF model to predict PM_{10} concentrations. These CALPUFF results were compared against the PSD Class II increment standards and the previous ISCST3 results.

The results of this CALPUFF comparative modeling analysis are ***significantly lower*** than the results from the ISCST3 dispersion modeling demonstration previously approved by the APCP. These dramatically improved results warrant a review of the construction permit conditions to protect air quality as they now appear unnecessary.

Background

The APCP approved Holcim's modeling protocol for the use of the ISCST3 dispersion model for the Lee Island project on March 8, 1999. Holcim submitted the first modeling demonstration in May 2000 and worked diligently with the APCP over three years to provide a complete technical demonstration of compliance with the National Ambient Air Quality Standards (NAAQS) and PSD increment standards. The APCP determined that the ISCST3 modeling demonstration was complete in a May 16, 2003 letter, revised August 7, 2003.

In March 2001, a full two years following the approval of the ISCST3 modeling protocol, EPA Region VII commented that the CALPUFF model should have been used. Despite the timing of the comment and the existence of a previously approved modeling protocol, the APCP transmitted this request to Holcim in September 2001.

On March 3, 2003, Holcim submitted a letter to the APCP and EPA Region VII responding to the CALPUFF comment. In the March 3, 2003 letter, Holcim provided the APCP with a review of the regulatory and technical issues related to this comment. The most significant finding by Holcim's modeling experts was that the CALPUFF model was expected to predict *lower* concentrations than the ISCST3 model, due to some very conservative modeling assumptions that were required in the ISCST3 modeling demonstration. As an alternative to providing a CALPUFF modeling study, Holcim proposed to begin collecting on-site meteorological data and to have it available for future permitting needs. A post-construction PM_{10} monitoring plan was proposed as a permit condition to address the concerns of model adequacy.

Holcim met with EPA on March 6, 2003 to discuss this response, with the APCP participating by telephone. Neither agency provided Holcim with a response to the March 3, 2003 letter following this meeting.

The use of the CALPUFF model requires site-specific meteorological data. For the purpose of collecting on-site meteorological data, site locations for three (3) 10-meter towers were determined in conjunction with APCP and EPA Region VII personnel and approved by the APCP on January 30, 2002. Holcim submitted a Quality Assurance Project Plan (QAPP) on September 5, 2002, and received APCP approval of the QAPP on January 27, 2003. After receiving this approval, Holcim purchased and installed the monitoring equipment. Data collection began on May 1, 2003.

On November 25, 2003, Holcim submitted a modeling protocol to EPA Region VII and the APCP for using the CALPUFF model and the on-site meteorological data. On January 2, 2004, the APCP approved the protocol with comments (including those from EPA Region VII), and supplemented the approval with a February 10, 2004 letter.

Summary of Results

The following table summarizes the highest-first-high (H1H) and highest-second-high (H2H) results from the two modeling analyses, which are the significant results from a regulatory perspective. PSD increment compliance is judged on the basis of the H2H concentration.

The ISCST3 model results are the 5-year maximum predicted impacts using the approved 5-year National Weather Service meteorological data set. The CALPUFF results are the maximum predicted impacts using the three (3) on-site meteorological data stations. The maximum predicted impacts from the CALPUFF analysis are more than **25% lower than** those from the ISCST3 analysis, indicating a substantially reduced effect on the environment.

	Approved ISC Model Compliance Demonstration	**CALPUFF Supplementary Analysis**	**Percent Decrease (%)**
H1H PM_{10} concentration ($\mu g/m^3$)	31.522	23.558	**25.2%**
H2H PM_{10} concentration ($\mu g/m^3$)	25.568	18.230	**28.7%**

Compared to available PSD PM_{10} increment, the ISCST3 modeling analysis results indicate that, at the location of maximum impact, approximately 85% of the 24-hour PM_{10} increment will be consumed by the Lee Island plant. Conversely, the CALPUFF modeling analysis indicates only about 61% of available increment will be consumed as a maximum impact.

A significant potential benefit using the CALPUFF model is the ability to account for plume deposition. While the ISCST3 model allows deposition to be considered, the algorithm used would have required thousands of computer hours to analyze the multiple area sources present at Lee Island. The CALPUFF model does not have this limitation, and it is therefore appropriate to consider deposition. However, ***the CALPUFF results presented here did not include deposition.*** Although the use of deposition is consistent with the CALPUFF protocol, this analysis did not consider deposition in order to present a conservative and consistent comparison with the previous ISCST3 modeling demonstration. Future CALPUFF modeling studies (*i.e.*, a modeling study for the full 12 months of on-site meteorological data) will account for plume deposition. Deposition is a modeling option that can only serve to lower the predicted concentrations; it cannot produce higher concentrations.

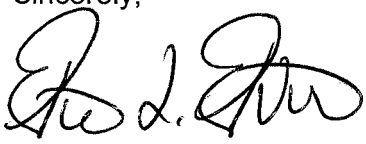
Conclusion

These results clearly show that the ISCST3 results, which showed compliance with all NAAQS and PSD increment standards, present conservative, worst-case results with regard to PM_{10} concentrations. As such, Special Condition (4)(E) is unnecessary to protect ambient air quality. Holcim requests that this condition be deleted from the construction permit.

Holcim will fulfill its commitment to collect twelve (12) months of on-site meteorological data and to submit a final CALPUFF Class II PM_{10} modeling demonstration to the APCP. This will still occur as previously communicated. It is simply inappropriate for the APCP to include such extra-regulatory language in a construction permit.

Thank you for your consideration on this matter. If you have any questions, please contact me at (636) 933-8170.

Sincerely,



Eric L. Ervin
Project Manager

cc: Richard Daye, U.S. EPA Region VII (Enclosure only)

From: LISA M. SCHWENT (636)933-8170
HOLCIM (US) INC
2942 U.S. HIGHWAY 61

BLOOMSDALE, MO, 63627

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Mike.Nixon@holcim.com

03/16/2004 04:05 PM

To: "Randy Raymond" <randy.raymond@dnr.mo.gov>
cc: James.Lunan@holcim.com
Subject: Holcim Comment

Randy,

We faxed a comment relating to short-term SO2 limits to Leanne's attention (cc'ing you) this afternoon. A Fedex package with the original comment letter, plus the CD modeling files that back it up will be dispatched Wednesday for Thursday delivery. For yours (and Dawn's) convenience, I uploaded the modeling files from the CD to a new folder on your FTP site entitled "Randy Raymond." That should give you a head start on reviewing the totality of the comment before the package arrives, probably on Thursday.

Let me know if you have any questions.

Michael Nixon
Project Engineer

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VIA FACSIMILE (573) 751-2706 AND FEDERAL EXPRESS

March 16, 2004

Ms. Leanne Tippett
Missouri Department of Natural Resources
Air Pollution Control Program
P. O. Box 176
Jefferson City, MO 65102-0176

RE: Holcim (US) Inc. - Lee Island Project
Comment on Preliminary Determination
Project No. 2000-05-077

Dear Leanne:

We are continuing our review of the Preliminary Determination for the Holcim (US) Inc. ("Holcim") Lee Island Project issued by the Air Pollution Control Program ("APCP") on February 22, 2004. We have identified another issue that concerns us with the Preliminary Determination; namely, the air-quality analysis based, short-term emission limits for sulfur dioxide (SO_2) on the in-line kiln/raw mill system and coal mill system.

Special condition (4)(A) of the Preliminary Determination places 3-hour and 24-hour SO_2 emission limits on the in-line kiln/raw mill system and coal mill system that are equivalent, on an hourly basis, to the proposed annualized emission limit for the facility of 1.26 lbs/ton of clinker produced. The in-line kiln/raw mill system emission limit is 595.2 lb/hr, and the coal mill system emission limit is 99.2 lb/hr.

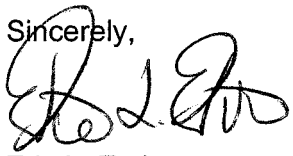
Holcim recognizes that short-term emission limits for many pollutants are often warranted to protect against National Ambient Air Quality Standard (NAAQS) violations, Prevention of Significant Deterioration (PSD) increment violations, or other air quality related concerns. Further, Holcim believes that these emission limits can be met on a long-term basis. Due to process variability, however, additional flexibility may be necessary on a short-term basis. Based on the operating design of the proposed kiln system, Holcim has determined that a conservative facility-wide short-term SO_2 emission limit would be 2.8 lbs/ton of clinker produced. This translates to an in-line kiln/raw mill system emission limit of 1,267.6 lb/hr and a coal mill system emission limit of 275.6 lb/hr. These emission limits would be valid for both the 3-hour and 24-hour short-term averaging periods.

A dispersion modeling analysis was conducted to demonstrate that these emission rates would not cause or contribute to an exceedance of the PSD increment or NAAQS for SO_2. The results of the analysis indicate that the Lee Island plant will continue to demonstrate compliance with the NAAQS and PSD increments for SO_2 at the higher proposed short-term emission rates. Therefore, on the basis of the dispersion modeling analysis, Holcim requests that the short-term SO_2 emission limits be increased to 1,267.6 lb/hr for the in-line kiln/raw mill system and 275.6 lb/hr for the coal mill system.

The modeling analysis was based on the APCP-approved SO_2 modeling files that were submitted with Addendum No. 3 to the Prevention of Significant Deterioration and National Emission Standards for Hazardous Air Pollutants permit application. Attachment A describes the dispersion modeling analysis for SO_2.

If you have any questions, please contact Dan Carney of Schreiber, Yonley & Associates at (636) 349-8399 or me at (636) 933-8170.

Sincerely,



Eric L. Ervin
Project Manager

Attachment A

SO_2 Modeling Analysis

In support of March 16, 2004 Comment Letter to Preliminary Determination for Project No. 2000-05-077

Prepared by:

Schreiber, Yonley & Associates

for

Holcim (US) Inc.

March 16, 2004

Methodology

The methodology used in this modeling analysis is, to a large extent, the same as that presented in and used in Addendum No. 3. The following paragraphs present a brief summary of the modeling methodology for this analysis, pointing out any differences between the two analyses.

The industrial source complex short-term (ISCST3) model Version 00101 was used to determine ambient impacts. The model was executed using regulatory default options, elevated terrain receptors, and rural dispersion mode. The meteorological data used for the analysis consisted of surface data collected from 1983 through 1987 at Lambert Field in St. Louis (Station #13994) and mixing height data collected during the same period at the National Weather Service station in Salem, Illinois (Station #03879). As discussed in Addendum No. 3 and as used in the APCP-approved modeling analysis, the meteorological data was modified such that all mixing heights less than 2.1 meters were adjusted to 2.1 meters.

Receptor elevations were imported into the ISCST3 model using digital elevation model (DEM) United States Geological Survey (USGS) 7.5-minute series maps. The elevations were determined from the Universal Transverse Mercator (UTM) coordinates for each receptor. Table 1 identifies the USGS DEM maps used to determine receptor elevations.

TABLE 1
USGS DEM MAPS

Ames IL	Gray Summit MO	Old Mines MO
Anthonies Mill MO	Halifax MO	Onandaga Cave MO
Baldwin IL	Herculaneum MO	Pacific MO
Banner MO	Higdon MO	Paderborn IL
Belew Creek MO	House Springs MO	Palmer MO
Belgique MO	Hurricane MO	Parker Lake
Belgrade MO	Huzzah MO	Patton MO
Berryman MO	Iron Mountain Lake MO	Perryville East MO
Bloomsdale MO	Irondale MO	Perryville West MO
Bonne Terre MO	Ironton MO	Potosi MO
Bunker MO	Jackson MO	Prairie du Rocher IL
Cahokia IL	Johnson Mountain MO	Redbud IL
Cedar Hill MO	Johnson Shut Ins MO	Renault IL
Centerville MO	Kaskaskia IL	Rhodes Mtn MO
Cherokee Pass MO	Kirkwood MO	Richwoods MO
Chester IL	Knob Lick MO	Rock Pile Mountain MO
Coffman MO	Labadie MO	Rockwood IL MO
Columbia IL	Lake Killarney	St. Clair MO
Corridon MO	Lawrenceton MO	Scopus MO
Cortois MO	Lebanon IL	Sedgewickville MO
Crosstown MO	Leslie MO	Selma MO
Cyclone Hollow MO	Lesterville MO	Shirley MO
Danby MO	Lithium MO	Spring Bluff MO
Davisville MO	Lonedell MO	Sprott MO
Des Arc NE MO	Manchester MO	Stanton MO
De Soto MO	Marquand MO	Ste Genevieve MO
Ebo MO	Mascoutah IL	Sullivan MO
Edgehill MO	Maxville MO	Tiff MO
Eureka MO	Meramec State Park MO	Union MO
Evansville IL	Millersville MO	Valmeyer IL
Farmington MO	Millstadt IL	Viburnum West MO
Festus MO	Mineral Point MO	Viburnum East MO
Flat River MO	Minnith MO	Vineland MO
Fletcher MO	Moselle MO	Wachita Mountain MO
Fredericktown MO	New Athens East IL	Walsh IL
Freeburg IL	New Haven MO	Washington East MO
Freidheim MO	New Athens West IL	Washington West MO
Frenchvillage IL	Oak Ridge MO	Waterloo IL
Frenchvillage MO	Oakville MO	Webster Groves MO
Glover MO	Oates MO	Weingarten MO
Graniteville MO	O'Fallon IL	Womack MO
Greeley MO		

Receptors were set up on a Cartesian grid scaled by the UTM coordinate system. The property boundary was denoted with 50-meter spaced receptors. A fine grid (100-meter spacing) extended beyond the boundary for at least 500 meters in each direction. Medium grids (500-meter spacing) were extended beyond the fine grid an additional 2,000 meters. To be conservative, the coarse grids (1,000-meter spacing) were expanded to extend beyond the medium grid by 45 km to the north, 36 km to the east, 65 km to the south, and 73 km to the west. The model output files were checked to verify that no significant impact was predicted within 5 km of the extent of the coarse grid in any direction.

Addendum No. 3 indicated that all exhaust stacks at the Lee Island plant would be less than good engineering practice (GEP) stack height. Being less than GEP stack height, all exhausts are therefore acceptable as designed for inclusion in the analysis. No stack parameter changes to Lee Island plant sources are included in this modeling analysis. Therefore, the GEP stack height analysis presented in Addendum No. 3 is still valid.

Buildings and other structures that can contribute to downwash effects on point source emissions were accounted for in the analysis submitted with Addendum No. 3 and have likewise been accounted for in this analysis. Since no changes were made to the structures or point source parameters that are included as part of the Lee Island plant, the information presented in Addendum No. 3 is still valid.

Lee Island Emissions

The emission source parameters used in this analysis are identical to those listed in Addendum No 3 and the APCP-approved modeling analysis. The emission rates used in the analysis are listed in Table 2. The only difference between this analysis and the APCP-approved analysis is the specified emission rates for the in-line kiln/raw mill system and coal mill system.

TABLE 2
MODELED SO_2 EMISSION RATES

Emission Point	Source	Emission Rate	
		lb/hr	g/s
EP49	In-Line Kiln/Raw Mill	1,267.6	159.72
EP115	Coal Mill	275.6	34.72

Increment and NAAQS Inventories

The emissions inventories used for the increment and NAAQS analyses are identical to the ones listed in the APCP-approved SO_2 modeling analysis.

Significant Impact Determination

In order to determine the appropriate receptor grid size for increment and NAAQS analyses, a base modeling file containing just the Lee Island in-line kiln/raw mill system and coal mill system was run using the proposed short-term SO_2 emission rates shown in Table 2. The course receptor grid was extended until impacts at the furthest receptors in all directions from the plant were below the significant impact threshold level for the 3-hour and 24-hour averaging periods (25 $\mu g/m^3$ and 5 $\mu g/m^3$, respectively). To be conservative, the receptor grid set up for subsequent increment and NAAQS modeling extended at least 5 km past the furthest significant receptor in all directions around the plant. Table 3 presents the results of the significant impact determination.

TABLE 3
HIGHEST MODELED SO_2 IMPACTS

Year	Maximum Modeled Concentration ($\mu g/m^3$)	
	3-Hour Averaging Period	24-Hour Averaging Period
1983	243.7	52.2
1984	315.1	74.7
1985	361.7	67.6
1986	235.4	58.5
1987	254.9	83.1
Maximum ($\mu g/m^3$)	361.7	83.1
Significant Impact Level ($\mu g/m^3$)	25	5

Increment Consumption Compliance Demonstration

Increment consumption compliance demonstrations were conducted based on the APCP-approved modeling files. These files were modified to include the new Lee Island SO_2 emission rates and the extended receptor grid determined from the significant impact analysis. Increment analyses were conducted for the following four sets of baseline area receptors:

- Lee Island;
- Randolph County, Illinois;
- Chemical Lime Corporation (CLC) on-property; and
- CLC off-property.

The modeling results are summarized in Table 4.

TABLE 4
SO_2 INCREMENT ANALYSIS RESULTS

Baseline Area Receptors	Averaging Period	Highest Modeled Increment Consumption* ($\mu g/m^3$)
Lee Island	3-hour	321.5
	24-hour	51.4
Randolph County	3-hour	95.5
	24-hour	22.4
CLC On-Property	3-hour	18.0
	24-hour	6.6
CLC Off-Property	3-hour	302.8
	24-hour	80.6
Maximum	3-hour	321.5
	24-hour	80.6
PSD Increment*	3-hour	512
	24-hour	91

* High-second-high modeled impact

Results of the modeling analyses indicated that emissions from the Lee Island plant in addition to existing increment consuming sources would not cause or contribute to an exceedance of the SO_2 increment at any increment consuming receptor in Randolph County, Illinois or Missouri.

NAAQS Compliance Demonstration

A full impact analysis that included the emissions from nearby sources was performed to demonstrate compliance with the NAAQS for SO_2. The initial analysis indicated modeled exceedances of the SO_2 NAAQS, Table 5. Therefore, additional analyses were required to demonstrate that emissions from Lee Island sources did not cause or contribute to the exceedances.

TABLE 5
SO_2 NAAQS ANALYSIS RESULTS

Analysis	Averaging Period	Standard/Limit ($\mu g/m^3$)	Holcim's Results ($\mu g/m^3$)	Exceedance Predicted
NAAQS	3-hour	1,300	4,439	Yes
	24-hour	365	864	Yes
Insignificance	3-hour	25	27.71	Yes
	24-hour	5	5.21	Yes
Insignificance in Space and Time	3-hour	25	<25	No
	24-hour	5	<5	No

A total of thirteen receptors from the initial analysis were identified that registered at least one exceedance of the 3-hour or 24-hour NAAQS (including the background SO_2 concentration). A refined modeling analysis was conducted to determine whether Lee Island sources have a

significant impact on any of the thirteen receptors during the entire meteorological data period. As shown in Table 5, Lee Island sources did register significant impacts on these receptors for both the 3-hour and 24-hour averaging periods. Therefore, an additional analysis was required to demonstrate that at the times the NAAQS exceedances are predicted, the Lee Island sources have an insignificant effect.

As shown in Table 5, the additional analysis demonstrated that the Lee Island sources did not have a significant impact on any of the 3-hour or 24-hour modeled exceedances. Therefore, predicted impacts using the proposed short-term in-line kiln/raw mill system and coal mill system emission rates demonstrate compliance with the NAAQS for SO_2.

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March 29, 2004

Ms. Leanne Tippett
Missouri Department of Natural Resources
Air Pollution Control Program
P. O. Box 176
Jefferson City, MO 65102-0176

RE: Holcim (US) Inc. - Lee Island Project
Supporting Information for March 16, 2004 Preliminary Determination Comment
Project No. 2000-05-077

Dear Leanne:

On March 16, 2004, Holcim (US) Inc. ("Holcim") submitted a comment to the Air Pollution Control Program ("APCP") regarding the Lee Island Project Preliminary Determination issued on February 22, 2004. The comment provided justification and analyses for increasing the short-term SO_2 emission limits from a Class II area perspective. Additional analyses are included as Attachment A to this letter to support the proposed short-term SO_2 emission limit increases from a Class I area PSD Increment perspective.

A dispersion modeling analysis was conducted to demonstrate that these emission rates would not cause or contribute to an exceedance of the Class I PSD increment for SO_2. The results of the analysis indicate that the Lee Island plant will continue to demonstrate compliance with all applicable thresholds at the higher proposed short-term emission rates. Therefore, on the basis of the March 16 Class II area modeling analysis and the Class I area modeling analysis provided as Attachment A, Holcim requests that the short-term SO_2 emission limits be modified as appropriate.

The modeling analysis was based on the APCP-approved Class I area analysis modeling files that were submitted in support of the Prevention of Significant Deterioration and National Emission Standards for Hazardous Air Pollutants permit application. Attachment A describes the dispersion modeling analysis for the Class I PSD increment demonstration for SO_2. . The revised analyses included a first step to reproduce MDNR's CALMET/CALPUFF modeling analysis using the MDNR databases and the maximum annual SO_2 emissions rate to ensure this updated analysis using the proposed short-term SO2 emission limits would be performed in the exact same manner as the previous MDNR analysis.

If you have any questions, please contact Ralph Morris of ENVIRON at (415) 899-0708 or me at (636) 933-8170.

Sincerely,

Eric L. Ervin
Project Manager

Attachment A

Class I Area SO_2 Modeling Analysis
Class I PSD Increment Demonstration

In support of March 29, 2004 Comment Letter to Preliminary Determination for Project No. 2000-05-077

Prepared by:

ENVIRON

for

Holcim (US) Inc.

March 29, 2004

REVISED HOLCIM LEE ISLAND CLASS I AREA ANALYSIS USING SHORT-TERM SO_2 EMISSION LIMITS

In previous analyses, potential impacts of the proposed Holcim (US) Inc. (Holcim) Lee Island cement plant on air quality and Air Quality Related Values (AQRV) at nearby Class I areas were estimated using the CALMET/CALPUFF modeling system assuming maximum annual emissions. That is, emissions were based on the assumption that the plant was operating at full capacity seven (7) days per week, fifty-two (52) weeks per year, with no down time. Recently, Holcim has provided a comment requesting an increase in the maximum allowable short-term (3-hour and 24-hour) SO_2 emissions rates for Lee Island and demonstrating that the new short-term SO_2 emissions rates would not endanger the SO_2 National Ambient Air Quality Standard (NAAQS) and Class II PSD increments near the project. A revised Class I modeling analysis using the short-term SO_2 emissions limits for Lee Island is presented in this document.

Previous Class I Area Modeling

ENVIRON submitted the Class I area analysis for the proposed Holcim Lee Island facility to the Missouri Department of Natural Resources (MDNR) and the U.S. Fish and Wildlife Service Federal Land Managers (FLMs) in a report dated June 28, 2003 (ENVIRON, 2003) and subsequent addenda. The CALMET/CALPUFF modeling system was used to estimate the impacts of Lee Island as well as all PSD increment consuming sources in a multistate region on PSD pollutant concentrations, visibility and acid deposition at the Mingo and Hercules Glade Class I areas. The Lee Island Class I area analysis demonstrated that the facility would not have an adverse impact on the Class I area air quality or on any AQRV.

The FLMs have received several such Class I area analysis of impacts at the Mingo Class I area for different sources and have developed a common CALMET/CALPUFF database so they could evaluate the AQRV impacts (including visibility) of proposed new sources using a consistent database. The new FLM CALMET/CALPUFF database covered a smaller area with higher resolution (1.5 km versus 4 km) than used by MDNR for increment compliance modeling. The FLM's CALMET/CALPUFF modeling demonstrated that Lee Island would not have an adverse visibility impact at the Mingo Class I area. The MDNR obtained the Holcim/ENVIRON 4 km and FLM 1.5 km CALMET/CALPUFF databases and performed their own modeling using the larger 4 km database with slightly different assumptions. MDNR's analysis also showed that Lee Island would not have an adverse impact on the Class I area air quality or AQRV.

Revised Lee Island Short Term SO_2 Emission Limits

The draft PSD permit issued by MDNR on February 22, 2004 for public comment contained multiple emission rate limitations for SO_2. Most notably, the draft permit required the application of Best Available Control Technology (BACT) to achieve a 12-month rolling average emission rate of 1.26 lb SO_2 per ton of clinker or 694 lb SO_2 per

hour (also on a 12-month rolling average basis). The total annual emissions of SO_2 authorized by the draft PSD permit totaled 3,041 tons. The draft permit also included short-term 3-hour and 24-hour average SO_2 emissions limits identical to the 12-month rolling average BACT limits.

Holcim has provided a comment to MDNR requesting increased 3-hour and 24-hour emission limits for SO_2 to reflect operational flexibility requirements. The total annual emissions of SO_2 from the facility will be unchanged by this comment at 3,041 tons

Table 1 below lists the annualized SO_2 emission rates used in the previous Lee Island Class I area analysis and the revised maximum 3-hour and 24-hour short-term SO_2 emission limits being proposed by Holcim. The Class I area modeling analysis was performed for the Mingo Class I area using the updated MDNR CALMET/CALPUFF modeling databases for 1990, 1992 and 1996 to demonstrate compliance with short-term PSD Class I SO_2 increment standards. The first step in this process was to reproduce the MDNR CALMET/CALPUFF modeling analysis using their databases and the maximum annual SO_2 emissions rate to ensure this updated analysis would be performed in the exact same manner as the previous MDNR analysis. Then, the analysis was redone using the maximum 3-hour SO_2 emissions rates to estimate the 3-hour and 24-hour SO_2 PSD concentration increments at the Mingo Class I area.

Table 1. Holcim Lee Island maximum annual, 24-hour and 3-hour emission rates.

Point ID	Source	SO2 Emission Rate	
		lb/hr	g/s
Maximum Annualized Emission Rate			
EP49	In-Line Kiln/Raw Mill	595.2	75.0
EP115	Coal Mill	99.2	12.5
Maximum 24-Hour Emissions Rate			
EP49	In-Line Kiln/Raw Mill	937.0	118.06
EP115	Coal Mill	220.5	27.78
Maximum 3-Hour Emissions Rate			
EP49	In-Line Kiln/Raw Mill	1,267.6	159.72
EP115	Coal Mill	275.6	27.78

Reproduction of the MDNR CALMET/CALPUFF Modeling

The MDNR CALMET/CALPUFF databases were downloaded from the MDNR ftp site and set up on ENVIRON's Linux operating system. The MDNR ran CALMET/CALPUFF on a Windows platform so some conversion was necessary. Also, one of the input files was missing from the MDNR ftp site (i.e., the OZONE.DAT file). ENVIRON contacted MDNR and was informed that the OZONE.DAT file that ENVIRON generated and submitted was used for the analysis.

The first step in the revised Class I area SO_2 modeling using MDNR's CALMET/CALPUFF databases was to reproduce the results reported by MDNR using

the annual SO_2 emissions. The maximum estimated 3-hour and 24-hour SO_2 concentrations at Mingo for 1990, 1992 and 1996 as reported by MDNR are listed in Table 2a, whereas Table 2b contains the same information for the CALPUFF modeling performed on ENVIRON's Linux computer systems using MDNR's databases. The maximum estimated SO_2 concentrations produced on ENVIRON Linux computers for 1990 and 1992 match the MDNR results exactly, whereas the results for 1996 are close but do not match exactly. In the past, CALPUFF has sometimes produced slightly different results using different computer systems, or even different compilers on the same computer system, so the differences in the 1996 results are not surprising. Given this, and the fact that the results match exactly for 1990 and 1992 and match within 3% for 1996 ENVIRON proceeded with the revised modeling using the maximum 3-hour short-term SO_2 emissions limits.

The estimated 3-hour and 24-hour SO_2 concentrations at the Mingo Class I area due to Lee Island emissions exceed the single source Significant Impact Level (SIL). A cumulative assessment is therefore needed for short-term SO_2 concentrations where the SIL becomes the Class I area PSD increments.

Table 2a. Maximum estimated short-term SO_2 PSD concentration Class I area impacts of the proposed Lee Island cement plant estimated by MDNR using maximum annual emissions and refined CALMET/CALPUFF modeling for 1996, 1992 and 1990.

Year, Concentration and Averaging Time	Class I Area	Lee Island Impact ($\mu g/m^3$)	Proposed SIL ($\mu g/m^3$)	PSD Class I Increment ($\mu g/m^3$)
1996 SO_2 24-Hour	Mingo	0.37	0.20	5.00
1992 SO_2 24-Hour	Mingo	0.39	0.20	5.00
1990 SO_2 24-Hour	Mingo	0.36	0.20	5.00
1996 SO_2 3-Hour	Mingo	1.18	1.00	25.00
1992 SO_2 3-Hour	Mingo	0.93	1.00	25.00
1990 SO_2 3-Hour	Mingo	1.37	1.00	25.00

Table 2b. Maximum estimated short-term SO_2 PSD concentration Class I area impacts of the proposed Lee Island cement plant estimated by ENVIRON using MDNR's databases and the maximum annual emissions for 1996, 1992 and 1990.

Year, Concentration and Averaging Time	Class I Area	Lee Island Impact ($\mu g/m^3$)	Proposed SIL ($\mu g/m^3$)	PSD Class I Increment ($\mu g/m^3$)
1996 SO_2 24-Hour	Mingo	0.37	0.20	5.00
1992 SO_2 24-Hour	Mingo	0.39	0.20	5.00
1990 SO_2 24-Hour	Mingo	0.36	0.20	5.00
1996 SO_2 3-Hour	Mingo	1.14	1.00	25.00
1992 SO_2 3-Hour	Mingo	0.93	1.00	25.00
1990 SO_2 3-Hour	Mingo	1.37	1.00	25.00

Lee Island SO_2 PSD Concentration Increments using Maximum Emissions Limits

The CALPUFF model was applied for the Lee Island source using the MDNR CALMET/CALPUFF database and the requested maximum 3-hour SO_2 emissions limits (see Table 1). The resultant estimated maximum 3-hour and 24-hour SO_2 concentrations at the Mingo Class I area are shown in Table 3.

The maximum estimated 3-hour and 24-hour SO_2 concentrations at the Mingo Class I area using the maximum 3-hour SO_2 emissions limits exceeds the single source SIL. Therefore, a cumulative assessment of all SO_2 PSD increment consuming sources in the area must be performed where the Class I PSD increments become the SIL.

Table 3. Maximum estimated short-term SO_2 PSD concentration Class I area impacts of the proposed Lee Island cement plant estimated by ENVIRON using MDNR's databases and the maximum 3-hour SO_2 emissions limit for 1996, 1992 and 1990.

Year, Concentration and Averaging Time	Class I Area	Lee Island Impact ($\mu g/m^3$)	Proposed SIL ($\mu g/m^3$)	PSD Class I Increment ($\mu g/m^3$)
1996 SO_2 24-Hour	Mingo	0.83	0.20	5.00
1992 SO_2 24-Hour	Mingo	0.88	0.20	5.00
1990 SO_2 24-Hour	Mingo	0.80	0.20	5.00
1996 SO_2 3-Hour	Mingo	2.56	1.00	25.00
1992 SO_2 3-Hour	Mingo	2.06	1.00	25.00
1990 SO_2 3-Hour	Mingo	3.06	1.00	25.00

Cumulative Assessment using the Maximum 3-Hour SO_2 Emissions Limit

The cumulative Class I area SO_2 increment assessment using the Lee Island maximum 3-hour SO_2 emissions limit was performed using the same methodology as that used by MDNR. The maximum cumulative 3-hour and 24-hour SO_2 concentrations at Mingo for the years 1990, 1992 and 1996 were extracted for all time periods that the Lee Island contribution exceeded the single source SIL. As reported by MDNR, there were 31 days during 1990, 1992 and 1996 in which the Holcim Lee Island 3-hour and/or 24-hour SO_2 impacts at Mingo exceeded the single source SIL using the maximum annual SO_2 emissions rates (MDNR, 2004, Appendix D). Using the maximum 3-hour SO_2 emissions limits, there were 106 days that exceeded the single source short-term SO_2 SIL at Mingo. The maximum 3-hour and 24-hour SO_2 cumulative impacts at Mingo for these 106 days from 1990, 1992 and 1996 are shown in Table 4. The maximum 3-hour SO_2 cumulative sources impact at Mingo is 7.33 $\mu g/m^3$. The maximum, which occurred during the 1990 meteorological modeling year, represents less than 30% of the 3-hour SO_2 PSD increment of 25 $\mu g/m^3$. The maximum estimated 24-hour SO_2 impact at Mingo is only 2.84 $\mu g/m^3$, which is also less than the 24-hour SO_2 PSD increment of 5 $\mu g/m^3$. Thus, using the maximum 3-hour SO_2 emissions limits for the proposed Holcim Lee Island source, along with all other SO_2 PSD increment consuming sources in MDNR's database,

the short-term PSD concentration increments at the Mingo Class I area are not in danger of being exceeded.

Table 4. Maximum estimated short-term SO_2 PSD concentration Class I area impacts of the cumulative emissions (Lee Island plus all SO_2 PSD increment consuming sources) estimated by ENVIRON using MDNR's databases and the maximum 3-hour SO_2 emissions limits for Lee Island for 1996, 1992 and 1990.

Year, Concentration and Averaging Time	Class I Area	Cumulative Impact ($\mu g/m^3$)	PSD Class I Increment ($\mu g/m^3$)
1996 SO_2 24-Hour	Mingo	1.54	5.00
1992 SO_2 24-Hour	Mingo	1.58	5.00
1990 SO_2 24-Hour	Mingo	2.84	5.00
1996 SO_2 3-Hour	Mingo	5.27	25.00
1992 SO_2 3-Hour	Mingo	3.51	25.00
1990 SO_2 3-Hour	Mingo	7.33	25.00

References

ENVIRON. 2003a. "Estimated Impacts of the Proposed Holcim (US) Inc. Lee Island Cement Plant on Air Quality and Air Quality Related Values at Nearby Class I Areas." Final Report. Prepared for Holcim (US) Inc. July 25.

ENVIRON. 2003b. "Estimated Impacts of the Proposed Holcim (US) Inc. Lee Island Cement Plant on Air Quality and Air Quality Related Values at Nearby Class I Areas" Addendum No. 1. Prepared for Holcim (US) Inc. September 25.

ENVIRON. 2004. "Estimated Impacts of the Proposed Holcim (US) Inc. Lee Island Cement Plant on Air Quality and Air Quality Related Values at Nearby Class I Areas: Revised Visibility Assessment using CALMET/CALPUFF/CALPOST Databases provided by the Federal Land Managers (FLMs)." Addendum No. 2. Prepared for Holcim (US) Inc. January 6.

MDNR, 2004. "Class I Ambient Air Quality Impact Analysis (AAQIA) for Holcim (US), Inc. – Lee Island Project – December 2003 and January 2004 Submittals." Kyra Moore, Construction Permit Unit Chief, Permit Section, APCP, Missouri Department of Natural Resources, February 10.

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March 29, 2004

Ms. Leanne Tippett
Missouri Department of Natural Resources
Air Pollution Control Program
P. O. Box 176
Jefferson City, MO 65102-0176

RE: Holcim (US) Inc. - Lee Island Project
Supporting Information for March 16, 2004 Preliminary Determination Comment
Project No. 2000-05-077

Dear Leanne:

On March 16, 2004, Holcim (US) Inc. ("Holcim") submitted a comment to the Air Pollution Control Program ("APCP") regarding the Lee Island Project Preliminary Determination issued on February 22, 2004. The comment provided justification and analyses for increasing the short-term SO_2 emission limits from a Class II area perspective. Additional analyses are included as Attachment A to this letter to support the proposed short-term SO_2 emission limit increases from a Class I area visibility perspective.

While Holcim recognizes that short-term emission limits for many pollutants are often warranted to protect against National Ambient Air Quality Standard (NAAQS) violations, Prevention of Significant Deterioration (PSD) increment violations, or other Air Quality Related Values (AQRV), additional flexibility may be necessary on a short-term basis due to process variability. Holcim has determined that a conservative facility-wide short-term SO_2 emission limit for the respective averaging periods would be correspond to the values in the following table:

Point ID	Source	SO_2 Emission Rate	
		lb/hr	g/s
Maximum 24-Hour Emissions Rate			
EP49	In-Line Kiln/Raw Mill	937.0	118.06
EP115	Coal Mill	220.5	27.78
Maximum 3-Hour Emissions Rate			
EP49	In-Line Kiln/Raw Mill	1,267.6	159.72
EP115	Coal Mill	275.6	27.78

A dispersion modeling analysis was conducted to demonstrate that these emission rates would not cause or contribute to an exceedance of the PSD increment, NAAQS or other AQRV for SO_2. The results of the analysis indicate that the Lee Island plant will continue to demonstrate compliance with all applicable thresholds at the higher proposed short-

term emission rates. Therefore, on the basis of the March 16 Class II area modeling analysis, the Class I area PSD increment demonstration provided under separate cover, and the Class I area visibility analysis provided as Attachment A, Holcim requests that the short-term SO_2 emission limits be increased to reflect the values in the table above.

If you have any questions, please contact Ralph Morris of ENVIRON at (415) 899-0708 or me at (636) 933-8170.

Sincerely,

Eric L. Ervin
Project Manager

cc: Mr. Bud Rolofson, USFWS Air Quality Branch

Attachment A

Class I Area Visibility Analysis

In support of March 29, 2004 Comment Letter to Preliminary Determination for Project No. 2000-05-077

Prepared by:

ENVIRON

for

Holcim (US) Inc.

March 29, 2004

REVISED HOLCIM LEE ISLAND CLASS I AREA VISIBILITY ANALYSIS USING SHORT-TERM SO_2 EMISSION LIMITS
(March 26, 2002)

In previous analyses, the potential impacts of the proposed Holcim (US) Inc. (Holcim) Lee Island cement plant on visibility at nearby Class I areas were estimated using the CALMET/CALPUFF modeling system assuming maximum annual emissions. That is, emissions were based on the assumption that the plant was operating at full capacity seven (7) days per week, fifty-two (52) weeks per year, with no down time. In the final development of the draft construction permit, maximum allowable short-term (3-hr and 24-hr) SO_2 emission rates identical to the 12-month rolling average limit were added to the permit, providing for no short-term variability of emissions.

Recently, Holcim has provided a comment requesting an increase in the maximum allowable short-term (3-hour and 24-hour) SO_2 emissions rates for Lee Island and demonstrated that the new short term SO_2 emissions rate would not endanger the SO_2 standards and PSD Class II increments near the project or the cumulative PSD Class I area 3-hour or 24-hour SO_2 increments at Mingo Class I area. The short term lb/hr limits requested are to allow for some short-term variability in the process. No change to the facility's annual limit of 3,041 tons per year is requested.

In this document we present a revised Class I visibility modeling analysis using the 24-hour short-term SO_2 emissions limits for Lee Island.

Previous Class I Area Modeling

ENVIRON submitted the Class I area analysis for the proposed Holcim Lee Island facility to the Missouri Department of Natural Resources (MDNR) and the U.S. Fish and Wildlife Service Federal Land Managers (FLMs) in a report dated June 28, 2003 (ENVIRON, 2003a) and subsequent addenda (ENVIRON, 2003b; 2004). The CALMET/CALPUFF modeling system was used to estimate the impacts of Lee Island as well as all PSD increment consuming sources in a multistate region on PSD pollutant concentrations, visibility and acid deposition at the Mingo and Hercules Glade Class I areas. The Lee Island Class I area analysis demonstrated that the facility would not have an adverse impact on any Class I area air quality or on Air Quality Related Values (AQRV).

The FLMs have received several such Class I area analysis of impacts at the Mingo Class I area for different sources and have developed a common CALMET/CALPUFF database so that they could evaluate the AQRV impacts (including visibility) of proposed new sources using a consistent database. The new FLM CALMET/CALPUFF database covered a smaller area with higher resolution (1.5 km versus 4 km) than used by MDNR for increment compliance modeling. The FLM's CALMET/CALPUFF modeling demonstrated that Lee Island would not have an adverse visibility impact at the Mingo Class I area (ENVIRON, 2004).

Revised Lee Island Short Term SO_2 Emission Limits

The draft PSD permit issued by MDNR on February 22, 2004 for public comment contained multiple emission rate limitations for SO_2. Most notably, the draft permit required the application of Best Available Control Technology (BACT) to achieve a 12-month rolling average emission rate of 1.26 lb SO_2 per ton of clinker or 694 lb SO_2 per hour (also on a 12-month rolling average basis). The total annual emissions of SO_2 authorized by the draft PSD permit totaled 3,041 tons. The draft permit also included short term 3-hour and 24-hour average SO_2 limits identical to the 12-month rolling average BACT limits for SO_2.

Holcim has provided a comment to MDNR requesting increased 3-hour and 24-hour emission limits for SO_2 to reflect operational flexibility requirements. The total annual emissions of SO_2 from the facility will be unchanged by this comment at 3,041 tons

Table 1 below lists the annualized SO_2 emission rates used in the previous Lee Island Class I area analysis and the revised maximum 3-hour and 24-hour short-term SO_2 emission limits being proposed by Holcim. The Class I area modeling analysis was performed for the Mingo Class I area using the FLM CALMET/CALPUFF modeling databases for 1990, 1992 and 1996 to estimate the visibility impacts using maximum 24-hour SO_2 emissions limits.

Table 1. Holcim Lee Island maximum annual, 24-hour and 3-hour emission rates.

Point ID	Source	SO2 Emission Rate	
		lb/hr	g/s
	Maximum Annualized Emission Rate		
EP49	In-Line Kiln/Raw Mill	595.2	75.0
EP115	Coal Mill	99.2	12.5
	Maximum 24-Hour Emissions Rate		
EP49	In-Line Kiln/Raw Mill	937.0	118.06
EP115	Coal Mill	220.5	27.78
	Maximum 3-Hour Emissions Rate		
EP49	In-Line Kiln/Raw Mill	1,267.6	159.72
EP115	Coal Mill	275.6	27.78

Revised Visibility Analysis Using 24-Hour SO_2 Emissions Limits

Table 2 lists the numbers of days the CALPUFF estimated change in extinction over a FLAG natural background exceeds the 5% and 10% thresholds for the three years of modeling using the maximum annual SO_2 emissions limits published previously (ENVIRON, 2004). In the three years of modeling there are 7 total days that the 5% change in extinction over a clean natural visibility threshold is exceeded and one day over the 10% threshold. The maximum visibility impact due to Lee Island using maximum annual emissions was 11.9% and occurred on Julian day 35 during 1990.

Table 2. Summary of number of days per year the change in extinction due to Lee Island over the FLAG natural background exceeds 5% and 10% at the Mingo Class I area using the 1990, 1992 and 1996 CALMET/CALPUFF databases developed by the FLMs and maximum annual SO2 emission rates.

Year	# Days > 5%	# Days > 10%	MaxΔBext (%)	Day of Max
1990	3	1	11.89%	35
1992	3	0	7.22%	80
1996	1	0	9.52%	352

Table 3 summarizes the number of days the 5% and 10% visibility thresholds are exceeded at Mingo when the maximum 24-hour SO_2 emissions limits are used in the Lee Island CALPUFF modeling. With the proposed new short-term SO_2 emissions, the maximum visibility impact at Mingo only increases 24 percent (from 11.9% to 14.8%). It should be noted that the occurrence of the maximum 24-hour SO_2 emissions at the same time with the infrequent adverse meteorological conditions that create Lee Island's visibility impacts at Mingo would be highly unlikely.

Table 3-2. Summary of number of days per year the change in extinction due to Lee Island over the FLAG natural background exceeds 5% and 10% at the Mingo Class I area using the 1990, 1992 and 1996 CALMET/CALPUFF databases developed by the FLMs and maximum 24-hour SO2 emission rates.

Year	# Days > 5%	# Days > 10%	MaxΔBext (%)	Day of Max
1990	7	1	14.80%	35
1992	6	0	8.79%	80
1996	2	1	11.10%	352

References

ENVIRON. 2003a. "Estimated Impacts of the Proposed Holcim (US) Inc. Lee Island Cement Plant on Air Quality and Air Quality Related Values at Nearby Class I Areas." Final Report. Prepared for Holcim (US) Inc. July 25.

ENVIRON. 2003b. "Estimated Impacts of the Proposed Holcim (US) Inc. Lee Island Cement Plant on Air Quality and Air Quality Related Values at Nearby Class I Areas" Addendum No. 1. Prepared for Holcim (US) Inc. September 25.

ENVIRON. 2004. "Estimated Impacts of the Proposed Holcim (US) Inc. Lee Island Cement Plant on Air Quality and Air Quality Related Values at Nearby Class I Areas: Revised Visibility Assessment using CALMET/CALPUFF/CALPOST Databases provided by the Federal Land Managers (FLMs)." Addendum No. 2. Prepared for Holcim (US) Inc. January 6.

MDNR, 2004. "Class I Ambient Air Quality Impact Analysis (AAQIA) for Holcim (US), Inc. – Lee Island Project – December 2003 and January 2004 Submittals." Kyra Moore, Construction Permit Unit Chief, Permit Section, APCP, Missouri Department of Natural Resources, February 10.

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March 29, 2004

Ms. Leanne Tippett
Missouri Department of Natural Resources
Air Pollution Control Program
P. O. Box 176
Jefferson City, MO 65102-0176

RE: Holcim (US) Inc. - Lee Island Project
Preliminary Determination Comments
Project No. 2000-05-077

Dear Leanne:

We have completed our review of the Preliminary Determination for the Holcim (US) Inc. ("Holcim") Lee Island Project issued by the Air Pollution Control Program ("APCP") on February 22, 2001. We have identified several additional issues that concern us with the Preliminary Determination, as described in the following paragraphs. The reference/citation for each issue is listed, followed by Holcim's response.

Special Condition Comments

Definition: 12-month rolling average

Definition: 12-month rolling average – the arithmetic mean of the most recent 12 monthly averages, or the arithmetic mean of the number of complete months available when there are less than 12 monthly averages available.

The intent of limiting emissions on a 12-month rolling average basis is to regulate emissions on a long-term average. Short-term variations (e.g., monthly) are acceptable as long as the long-term average emissions are as permitted. The 12-month rolling average emission limits included within the draft permit are derived from the application of Best Available Control Technology (BACT) and represent a very high level of control, suitable for a state-of-the-art manufacturing facility.

It is the second part of the definition of 12-month rolling average that causes concern on the part of Holcim. This clause states that when there are less than 12 monthly averages available, the 12-month rolling average is defined as "...the arithmetic mean of the number of complete months available."

Effectively, this definition defeats the intent of regulating emissions and specific emission rates on a long-term average and requires the facility to comply monthly with a limit that was ultimately suitable for compliance on a 12-month rolling average basis. This issue only exists during the first year of operations. After the first year, then no change is required.

During the permit application and review process, Holcim provided information to the department regarding the inherent process variability associated with the operation of cement kilns. This process variability is caused by a number of factors, most notably being the high temperatures associated with our process and the sensitivity to slight changes in the chemical and physical properties of our fuels and raw materials. While certain startup period situations will be addressed in accordance with the state's regulations regarding startup, shutdown and malfunction reporting, the inherent process variability still requires consideration with regards to the emission limits. We expect that this will be especially important during the initial operations of the facility, and so the fact that this is the only period where no long-term averaging is available in reporting is a significant concern to Holcim.

Holcim proposes that the definition of 12-month rolling average be changed to the following:

> Definition: 12-month rolling average – the arithmetic mean of the most recent 12 monthly averages.

Additionally, Holcim proposes that the reporting of 12-month rolling average emissions begin 12 months after commencing operations.

Alternatively, should the department require monthly emissions reporting during the first year of operations, Holcim proposes a monthly emissions limit for pollutants equal to:

2.0 * (12 month rolling average emission limit)

Special Condition (1)(B)

(B) The permittee must obtain prior approval from the department through the construction permitting process for changes at this installation when:

1. *new emission units are constructed, unless those emission units are exempted by rule; or,*
2. *existing emission units are modified that would:*
   - A. *increase emissions of any pollutant in violation of an emission limitation expressed in this permit;*
   - B. *increase emissions of any pollutant that does not have an express emission limitation above its actual emissions; or,*
   - C. *emit a pollutant not previously emitted.*

Changes that would require department review or potentially require construction permit review are specifically defined in the State's regulations. The condition should be revised to more specifically reflect the authority of the department with regard to requiring prior approval or making changes at the installation.

Holcim proposes replacing Special Condition (1)(B) with the following:

> (B) The permittee must obtain prior approval from the department for applicable changes at this installation through the construction permitting process under 10 CSR 10-6.060.

Special Conditions (1)(D) and (1)(E)

(D) The permittee shall update and maintain all 12-month rolling averages no later than ten (10) days after the end of a month.

(E) The permittee shall report any deviation from an emission limitation contained in this permit. The report shall be sent to the Air Pollution Control Program's Enforcement Section, P.O. Box 176, Jefferson City, Missouri 65102, no later than ten (10) days after the end of the month during which deviation occurs.

Holcim proposes the following modification to these Special Conditions:

> (D) The permittee shall update and maintain all 12-month rolling averages no later than ten (10) business days after the end of a month.
>
> (E) The permittee shall report any deviation from an emission limitation contained in this permit. The report shall be sent the Air Pollution Control Program's Enforcement Section, P.O. Box 176, Jefferson City, Missouri 65102, no later than ten (10) business days after the end of the month during which deviation occurs.

Should the department not accept the addition of "business" to the condition, Holcim would request the ten (10) day requirement be extended to (15) days to accommodate data collection and other resource requirements.

Special Condition (1)(H)

(H) This permit may be reopened with cause if:

1. *The department determines that this permit contains a material mistake or that inaccurate statements were made and used as the basis for establishing the emissions limitation standards or other terms of the permit.*
2. *The department determines that the permit must be reopened and revised to assure compliance with applicable law that would not otherwise (other than this construction permit) be dealt with.*

The department has chosen to include Special Conditions that include language taken from the state's Part 70 Operating Permit regulations (10 CSR 10-6.065). While not specifically supported or required in the Construction Permit regulations of 10 CSR 10-6.060, Holcim does not object to the concept of addressing the interim period between the issuance of the Construction Permit and the Operating Permit with certain "operating permit-like" special conditions.

Specifically, Special Condition (1)(H) refers to permit reopening. The regulatory language for reopening a Part 70 Operating Permit is found in the State's regulations at 10 CSR 10-6.065 (6)(E)6.A.(I) through (V). Among these five situations that may be cause for reopening an operating permit, only (II) and (V) have any potential relevance to a construction permit, as reflected in the current draft permit Special Condition (1)(H). However, Holcim proposes that the exact language from 10 CSR-6.065 (6)(E)6.A. (V) be used as follows:

(H) This permit may be reopened with cause if:

1. *The department determines that this permit contains a material mistake or that inaccurate statements were made and used as the basis for establishing the emissions limitation standards or other terms of the permit.*
2. *The department determines that the permit must be reopened and revised to assure compliance with applicable requirements.*

We expect the Title V regulatory language regarding reopening will be included in our Title V permit when issued.

Special Condition (1)(L)

(L) The department may modify, revoke or reopen this permit for cause. The filing of an application or request for a permit modification, revocation, and re-issuance, or anticipated noncompliance, will not stay any permit condition.

This condition is based on the specific language from the Operating Permit regulations at 10 CSR-6.065 (6)(C)1.G. (III). There is already a reopening for cause condition in the construction permit, which is an additional safeguard not specifically provided for in the construction permit regulations. While this Special Condition (1)(L) is expected in the Title V permit, it is not relevant as a construction permit condition and should be removed.

Special Condition (1)(N)1.

1. *Any document (including reports) required to be submitted by the permittee shall contain a certification signed by a responsible official.*

The general requirement for certification is taken from the Operating Permit language in the State regulations. The language in this special condition, however, is different from that included in the regulations. Specifically, the draft permit contains language that replaced "under this rule" from the permit content section of the Operating Permit language (10 CSR 10-6.065(6)(C)3.A.) with "by the permittee" which makes it much broader.

As currently written, this condition is overly broad. The condition could require that even a simple letter response to the department, on any issue, be certified by a responsible official.

Holcim proposes the following language to modify the condition:

> 1. Any document (including reports) required to be submitted by the conditions of this permit shall contain a certification signed by a responsible official.

After the Title V is issued, this language will need to revert to the regulatory language of the Title V program.

Special Conditions (2)(A)1.E.(I) through (V)

(E) The following articles are examples of what will be included with the operations and maintenance plan identified in special condition (1)(A) above:

(I) The permittee shall equip each baghouse with a gauge or meter, which indicates the pressure drop across the control device. These gauges or meters shall be located such that department employees may easily observe them.

(II) The permittee shall keep replacement filters for the baghouses in accordance with the operations and maintenance plan identified in special condition (1)(A). The bags shall be make of fibers appropriate for operating conditions expected to occur (i.e., temperature limits, acidic and alkali resistance, and abrasion resistance).

(III) The permittee shall monitor and record the operating pressure drop within the design conditions specified by the manufacturer's performance warranty or according to information collected during performance testing.

(IV) The permittee shall maintain an operating and maintenance log for the baghouses which shall include the following:

(a) Incidents of malfunction, with impact on emissions, duration of event, probable cause, and corrective actions; and

(b) Maintenance activities, with inspection schedule, repair actions, and replacements, etc.

The requirements in these special conditions will be addressed through the Operations and Maintenance (O&M) plan required by Special Condition (1)(A). Therefore, these requirements are redundant and should be deleted. In addition, the requirement to conduct daily delta-P readings is redundant with the Portland Cement MACT rule (PCMACT), which requires periodic visible emissions (VE) monitoring.

Special Condition (2)(A)2.A.

A. The permittee shall control the emission of PM_{10} from the quarry haul road(s) [all traffic, east quarry traffic, west quarry traffic, modeling emission points (EP) number 4 and emission unit (EU) numbers 1, 2 and 3] so as to achieve 90% control of PM_{10}.

This condition contains typographical errors. In addition, portions of this condition that are intended to clarify applicability may actually add confusion to the condition. Holcim therefore proposes to modify this special condition to the following:

> A. The permittee shall control the emission of PM_{10} from the quarry haul road(s) [modeling emission point (EP) number 4, emission unit (EU) numbers 1, 2 and 3] so as to achieve 90% control of PM_{10}.

Special Condition (2)(A)4.

4. Truck Washing Stations – To control the tracking of particulate matter onto plant access roads, the permittee shall install and operate truck washing station(s) to wash trucks leaving the facility. The permittee may suspend use of the truck washing station(s) during periods of freezing conditions when its use would be inadvisable for traffic safety reasons.

This condition requiring the operation of a truck washing station should be expanded to include other times when washing isn't necessary for nuisance dust control (e.g., during rain events). Holcim therefore proposes the following edits to this special condition:

> 4. Truck Washing Stations – To control the tracking of particulate matter onto plant access roads, the permittee shall install and operate truck washing station(s) to wash trucks leaving the facility. The permittee may suspend use of the truck washing station(s) during periods of freezing conditions when its use would be inadvisable for traffic safety reasons and during periods of rainy or other inclement weather conditions when truck washing isn't necessary for nuisance dust control.

Special Condition (2)(A)5.D.

D. If the first test should indicate the inherent moisture content of the rock is less than 1.5% by weight, the permittee shall conduct a second test within thirty (30) days. If two (2) consecutive series of test results should indicate the final moisture content of the rock is less than 1.5% by weight, then the permittee will immediately apply amend this permit or submit a modification request to account for the revised information.

The requirement to amend or modify this permit should consider an allotment of time to develop the amendment or modification. Holcim therefore requests the following changes to this condition:

> D. If the first test should indicate the inherent moisture content of the rock is less than 1.5% by weight, the permittee shall conduct a second test within thirty (30) days. If two (2) consecutive series of test results should indicate the final moisture content of the rock is less than 1.5% by weight, then the permittee will apply to amend this permit or submit a modification request to account for the revised information within thirty (30) days after receipt of the most recent test data.

Special Condition (4)(A)2.

2. The permittee shall operate continuous SO_2 emission monitors to measure, record and report SO_2 emissions.

Holcim proposes to delete this condition due to it being identical to Special Condition (2)(B)4. Alternatively, should the department disagree that this condition should be deleted, Holcim proposes the following edits to clarify the special condition:

> 2. The SO_2 emissions monitoring requirements specified under special condition (2)(B)4 will be used to demonstrate compliance with this condition.

Special Condition (4)(B)2.

2. The permittee shall operate continuous CO emission monitors, or an appropriate and departmentally approved surrogate, to measure, record and report CO emissions from the in-line kiln/raw mill and coal mill exhausts.

Holcim proposes to delete this condition due to its being similar to Special Condition (2)(D) 4. Alternatively, the department should either make Special Condition (4)(B)2. identical to Special Condition (2)(D)4. to remove any ambiguity or potential for conflicting requirements or make Special Condition (4)(B)2. reference the monitoring requirements of Special Condition (2)(D)4.

Special Condition (4)(D)3.

3. The permittee shall report the results of the above air quality monitoring for PM_{10} to the department on a quarterly basis. When concentrations are monitored that exceed a National Ambient Air Quality Standard (NAAQS), the permittee shall report the monitored information (the beginning and ending date and time, and the value for the applicable standard time period) within seven (7) days of the event.

This condition presumes that an exceedance of a standard will be monitored. This presumption is not correct, based on the modeling demonstrations that have been completed. Accordingly, Holcim proposes the following modification to this special condition:

> 3. The permittee shall report the results of the above air quality monitoring for PM_{10} to the department on a quarterly basis. If concentrations are monitored that exceed a National Ambient Air Quality Standard (NAAQS), the permittee shall report the monitored information (the beginning and ending date and time, and the value for the applicable standard time period) within seven (7) days of the event.

Special Conditions (4)(E)2. and (4)(E)3.A.

2. If the concentrations resulting from this analysis are less than those predicted previously in the ISC analysis, then the permittee may request revisions to the PM_{10} monitoring plan required by condition (3)(D).

3. If resulting concentrations from this analysis are greater than those previously predicted in the ISC analysis, then:

A. if there are no violations of any air quality standards predicted, then either the permittee may request or the department may initiate changes to the PM_{10} monitoring plan required by condition (3)(D) (e.g. the location of monitors).

These conditions should be revised to reference special condition (4)(D) instead of special condition (3)(D).

Special Condition (4)(E)3.B.(I) through (IV)

B. if there are violations of any air quality standards predicted, then:

(I) the department has cause for reopening this permit under special condition (1)(H).

(II) The permittee will conduct a comprehensive review of the CALPUFF Class II PM_{10} modeling analysis results and develop a corrective action plan.

(III) The permittee will submit the corrective action plan to the department for approval.

(IV) *The permittee will implement the correction action plan immediately upon the department's approval.*

In a comment previously provided to the department, Holcim provided a supplementary CALPUFF Class II PM_{10} modeling analysis, covering seven (7) months of site meteorological data, and subsequently requested removal of these CALPUFF conditions from the construction permit.

Technical Review Document Comments

Page 16, Third Bullet

The department expects hazardous air pollutant (HAP) emissions to be emitted from the proposed equipment. HAPs of concern from this process are: beryllium, mercury, total hydrocarbons (THC), dioxins/furans, chlorine, hydrogen chloride, and compounds of lead, beryllium, mercury, arsenic, cadmium, chromium, manganese, and selenium.

The pollutant THC is not a listed HAP, but rather a surrogate for a certain class of HAPs (i.e., hazardous organic compounds). In addition, the pollutants beryllium and mercury are duplicated by being specifically cited as well as included under the "compounds of" subheading. Therefore, Holcim proposes the following modification to this bullet:

> The department expects hazardous air pollutant (HAP) emissions to be emitted from the proposed equipment. HAPs of concern from this process are: dioxins/furans, chlorine, hydrogen chloride, and compounds of lead, beryllium, mercury, arsenic, cadmium, chromium, manganese, and selenium.

Page 21, Table 1

A row of NO_x emissions consistent with the retirement of maximum allowable ERCs from Special Condition (5) should be inserted into Table 1. Additionally, the Table should have a row showing the resulting annual NO_x emissions with the addition of the 200 short tons of NO_x per year of source emissions.

Page 28, Bottom of Page

Correct "...law sulfur..." to "...low sulfur..."

Page 34, Fifth Full Paragraph

This paragraph discussing SNCR should have a statement that responds to the regulatory section above it that SNCR will achieve more than equivalent reductions to BACT since it is in addition to BACT.

Page 52, Mercury Discussion, Third Bullet

The 0..08 tons of mercury per year emissions estimate is below the BACT review threshold level of 0.1 tons of mercury per year;

This comment contains a typographical error in the emission rate of mercury. Holcim proposes the following modification to this bullet:

> The 0.08 tons of mercury per year emissions estimate is below the BACT review threshold level of 0.1 tons of mercury per year;

If you have any questions, please contact me at (636) 933-8170.

Sincerely,

Eric L. Ervin
Project Manager